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ABSTRACT

The introductory article in this volume of original papers presented at the American Association of Geographers' annual meeting explores some of the reasons for the increasing concern of geographers with matters of pedagogy. John M. Ball's paper, Toward a Humanistic Teaching of Geography, focuses on the need for more attention to the affective components of the teaching-learning process. Geography and Geographic Education: Paradigms and Prospects, by A. David Hill, begins with the question, "Are today's ideas and events in geographic education a part of a more general pattern of development in geography and education; did they evolve from some recognizable antecedents, and are they likely to be related and responsive to probable future developments?" James Gardner's paper discusses some strategies for relevant learning situations in physical geography. George Vuicich offers a possible model for training geography teachers within the context of a preliminary report describing the rationale and organization of four RPW's developed to encourage the adoption of and maximize the use of the High School Geography Project. Some of the remaining papers deal with: the functions of a problem-oriented field seminar; developing a communications-content model for geography workshops; and a preliminary evaluation report of the AAG project on the improvement of college geography instruction. (JLB)

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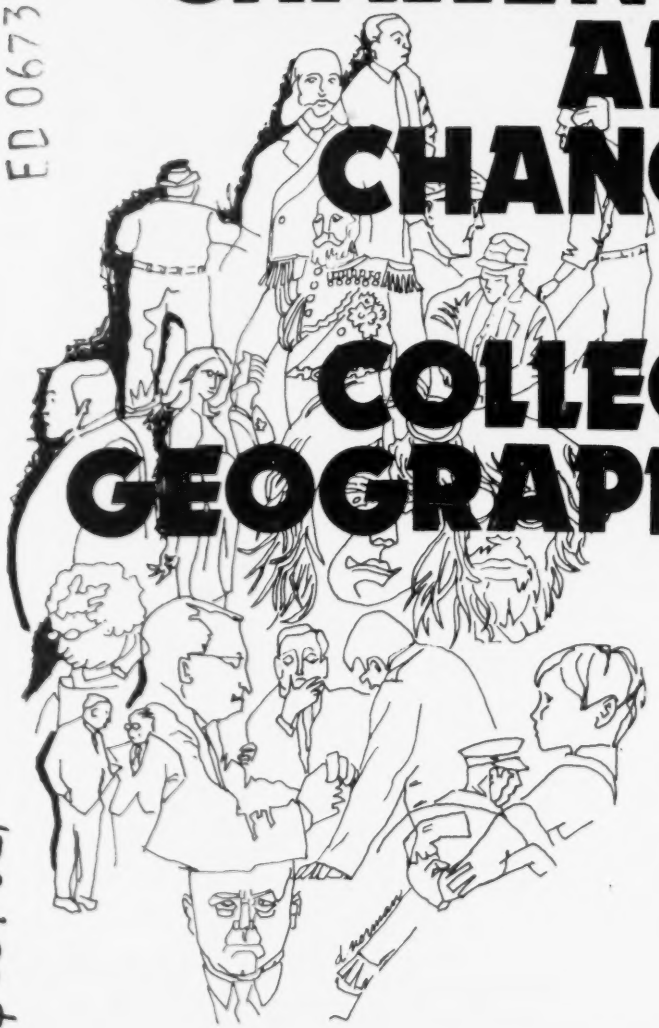
CHALLENGE AND CHANGE IN COLLEGE GEOGRAPHY



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CHALLENGE AND CHANGE IN COLLEGE GEOGRAPHY

Edited by

Nicholas Helburn

A collection of original papers to be presented at the Association of American Geographers' Annual Meeting

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INTRODUCTION

Nicholas Helburn
University of Colorado and ERIC/ChESS

Fifteen years ago it would have seemed strange that an academic discipline would concern itself with matters of mere pedagogy. Our annual and regional meetings dealt with expanding knowledge, and we paraded our special pieces of the research perimeter before the admiring eyes of our junior colleges, hoping for envy from our peers.

Any adequate explanation of the change toward self-conscious concern for teaching will have to review not only the individual contributions of courageous geographers but also the rapid advance of the behavioral and communication sciences. Communications specialists evaluate our meetings and journals. Information scientists advise us on storage retrieval and diffusion of information. Psychologists advise us on curriculum development, teacher education, and workshop design. I suspect that even now sociologists are studying our mobility, our status hierarchies, our invisible colleges. Many of us use the concepts of behavioral political science to understand and explain the power structure and decision-making of Geography--Geography defined as a group of people who identify partly because of common intellectual interests and partly because, in that intellectual commonality, they form a more or less cohesive social group.

It is the norms of that social group which have changed in the last fifteen years. Other norms--such as those dealing with social problems--have changed too, but it is the norms relating to teaching that we are

concerned with here. What we observe and want to accelerate is the belief (understanding) that since we have skills and knowledge important to large numbers of students, attention to the ways in which those skills and that knowledge can best be learned is worthy of our serious consideration. As curriculum designers and classroom managers, we exert a controlling influence on how it is learned.

There is an instructive paradox in the discipline/university matrix. Consider a university as being made up of many departments arranged in a column:

Astronomy	A
Biology	B
Communications	C
Drama	D
Economics	E
French	F
Geography	G
. . . . .	.
. . . . .	.
. . . . .	n

The university holds itself responsible for both teaching and research. But widespread dissatisfaction with the quality of teaching, even to militancy by students, has resulted in only small changes. The inadequate response of the university can be explained partly by intertia complicated by tenure. But careful analysis reveals that the reward system--mostly promotion and salaries--are biased in favor of recognizing research, rather than quality of teaching.

The mechanism by which the reward system operates takes us from a simple one-column graph to a matrix graph made by lining up all the universities in

parallel columns. All the art departments make one row, all the biology departments make another, all the geography departments still another. Each row represents a discipline--more precisely the academic portion of the discipline, for it omits scholars in government, industry, and so forth.

Departments	Universities			
	#1	#2	#3	#4
Astronomy	A	A	A	A
Biology	B	B	B	B
Communications	C	C	C	C
Drama	D	D	D	D
Economics	E	E	E	E
French	F	F	F	F
Geography	G	G	G	G
. . . . .	.	.	.	.
. . . . .	.	.	.	.
. . . . .	n	n	n	n

The paradox lies in the fact that one's promotion and salary within the university depends to a large degree on one's mobility laterally within the profession. Research and publication are necessary conditions for being known in the discipline, for being considered for employment in other departments, as well as for drawing respect and prestige to the institution.

The powerful novelty of our situation, with the discipline now recognizing the importance of learning and teaching, lies in ability to use the horizontal connections in the discipline to improve the quality of the educational experience in the university. If we can establish within the discipline a subset of geographers concerned with and skilled in the nature of

geographic learning; if we can keep them in touch with each other; if we can build upon each other's research and practice, then we can make the reward system of the university work to improve geographic learning. Our success will be its own reward in the upward spiral of better learning, more interested students, higher reputation among disciplines, higher quality students, better instructional materials, and so on.

Who knows but that our lesson might be learned and imitated by other disciplines, and colleges and universities might be saved from fossilization.

But success should not be taken for granted. Revolutions--especially quiet ones--are never easy. The maintenance of our "invisible college" within the discipline requires: continuing dedication to research on the learning/teaching process so that we have exciting results to share; continuing openness in sharing and recognition of others' success; continuing discrimination between the profound and the superficial; and above all, a continuing focus on student learning rather than teacher comfort.

This volume includes a few of the results from the increased attention to geographic learning and teaching. We trust, in future meetings, many more will be recognized and made available.

THE PARABLE OF A LITERATE FARMER

Duane S. Knos
Clark University

There once was a farmer, a most literate man who, in his reading, discovered a treatise on the value of manure for the productivity of his farm. The article made exquisite sense, for it explained in detail the effect of the chemical nutrients found in manure on the structure and growth of crops. It also pointed out the economy of keeping the beasts who produce the manure, for they yield a plethora of other useful products--horses for their motive energy, cows for their meat, milk, and cheese, chickens for their eggs and drumsticks, pigs for their hams, sheep for their wool and roasts. Indeed, the suppliers of this divers fare yield also the means for producing a waxing supply of the feed necessary for their own mission.

The farmer was so excited by his understanding of this signal verity of his universe that he committed himself to the amassing of manure. In his dreams the manure pile was infinite--he visualized himself accumulating more and more manure until his last day, at which time his children would carry on his life's work to make the pile higher and higher and more and more magnificently inclusive. For how could a wheel turning faster and faster in an ever-widening arc be more elegant than this rotation of feed-to manure-to feed that was so obviously the result of a provident Nature's infinite wisdom.

The farmer spent great effort in structuring his pile of manure. He carefully classified it according to type and quality. He analyzed it for its chemical content, its density, its structure. He tested it for its

qualities of decomposition, its mixing properties, and its effect on the structure of the soil. He observed a multitude of bacteria and insects that took as their milieu the object of his passion and he marveled at the harmony of their existence. He arranged his manure in a pile in such a way that each type and quality was positioned in a highly rational fashion. Any particular quality could be instantly withdrawn and combined with any other quality to produce a compound more splendid than any predecessor. He became so skilled in his techniques and so competent in his knowledge of manure that his fame spread far and wide. He was most satisfied with his accomplishment and he felt great joy as he walked around his pile and contemplated its magnificence and his understanding of it.

Now, as we said before, the farmer dreamed that the outcome of his labors would be carried beyond his allotted days. He felt, therefore, compelled to pass on his understanding of manure, so assiduously gained, to his progeny. In his later years he began to develop ways to transmit his understandings, his techniques, his skills of analysis; to teach his children about manure and to instill in them a love of the product and a commitment to its study. He told them more than once the story of the development of his pile, and assured them that one day they would inherit the trust of its further development. He described in minute detail the characteristics of its structure, and he tested them to insure his effect upon them.

He was sometimes disturbed because some of his children seemed to respond to his tests properly but couldn't seem to carry on their learning to the frontiers of new knowledge, while others who seemed to be rather imaginative did substantial violence to the structure. The one group of his children could absorb the symbols of his labor but could understand neither his style nor his motivation. The other group could not revere his artifact and, at the same time, practice the art of piling manure in their

own creative ways. Sometimes he despaired of his dreams.

Well he might despair. One child continued to point out to him that the crops to feed his animals were not prospering. Indeed, the fields were declining rapidly in productivity, since the manure was not being used for its purpose. The farmer, however, did not hear his child, for his pile was so large and so consuming of his effort that he was blinded to the fields beyond. His project atrophied, as was its destiny, and the world continued much as always it had.

TOWARD A HUMANISTIC TEACHING OF GEOGRAPHY

John M. Ball
Georgia State University

I wish to advance the thesis that the kind of teaching most of us have had, and the kind of teaching to which most of us subject our students, is a dehumanizing experience. In fact, little of our teaching is related to either learning or our avowed learning objectives. If one reflects a moment on the parade of his college and pre-college teachers and identifies those who significantly touched his life, the chances are they can be counted on one hand. This, rather than being accepted as a fait accompli, should signal a concern about teaching and learning. If we look at ourselves and ask, "How many of our own students are different people for having taken our geography course?" most of us would probably not rate a high score. The problem, I submit, is that we have been trained, and continue to dwell, in the stark, barren confines of intellectualism (the cognitive realm) and have not recognized the role that feelings and emotions (the affective realm) have in learning. It is the affective, when integrated with the cognitive, that gives real meaning to learning. Look back at those few teachers who significantly touched our lives when we were enthusiastic about learning, and from which we came away as different people. Don't we see a strong affective component present? To me it is imperative that those of us who are serious about our role as teachers look at ourselves, at our teaching strategies, and at the teaching outcomes. That is what I propose to do here.

First, I will review briefly the games we and our students play in the "traditional" teaching model. Next I will attempt to analyze some components of that teaching model. Finally, I will relate my thoughts on alternatives, most of which emerged only recently, largely as a result of the conferences we conducted during the 1970-71 school year.

THE TRADITIONAL TEACHING-LEARNING GAMES

The traditional introductory college geography classroom, in brief, is probably somewhat similar to the following. There is the professor, who--by this very title--is expected to profess, tell, or lecture. He determines the organization and content of the course, what students must do to "succeed," and the amount of learning that takes place. Presumably he is qualified for this role; he is intelligent, has the proper university degrees, and is an "authority" on his subject.

On the other side of the lectern are the students. And there are several implied assumptions about this group. First, they know very little, if anything. Second, they will learn by reading what they are told to read and hear what is told them in the lecture. Third, the professor is qualified to decide what subject matter his students need to know. And finally, the professor is able to determine in sufficient detail what it is the students have really learned so he can divide them into four or five levels for assigning grades.

We could go into much greater detail on this teaching-learning model, but in a general way I am confident it is familiar to most of us. If we were to apply the same kind of rigor for analyzing the components for learning as we do for our own research, I think we would change a number of things about this model. Let me focus on some of the specific elements of

this model and perhaps cause us to reflect on what it is we are doing and what it is we want to do as teachers.

MUST WE BE TEACHERS?

I have finally come to agree with Carl Rogers in believing that too much emphasis is given to teaching. In fact, I no longer believe that teaching is a worthy activity and wish we could hear less talk and concern about it. A discussion of teaching, how to improve it, and how to make it more effective raises all the wrong questions and gets us nowhere. Instead, this only serves as a detour from what should be our central concern. This view is summed up in the following statement from Carl Rogers' Freedom to Learn (Columbus, Ohio: Charles E. Merrill Publishing Co., 1969. pp. 103-104):

> . . . Teaching, in my estimation, is a vastly overrated function . . . . As soon as we focus on teaching the question arises, what shall we teach? I wonder if, in this modern world, we are justified in the presumption that we are wise about the future and the young are foolish. Are we really sure as to what they should know? Then there is the ridiculous question of coverage. What shall the course cover? This notion of coverage is based on the assumption that what is taught is what is learned; what is presented is what is assimilated. I know of no assumption so obviously untrue. One does not need research to provide evidence that this is false. One needs only to talk with a few students.

In this one statement Rogers covers much that should concern us. Our role as teachers is not unlike that of the preacher, inasmuch as we presume divine guidance in knowing precisely what kind and how much geography our students must know to reach eternal salvation. We might refer to this as the gospel according to ourselves or to others with whom we agree. The fact is, it seems to me (and whether we like it or not), that students really don't need any formal geography (or the college content of any other discipline) to lead useful, productive lives. I would like to think, however, that learning about the subject we teach can be of interest and

value, but for students to learn about it and for me to preach about it are two separate, and quite possibly unrelated, activities.

Then there is the matter of coverage. We would like very much for our students to learn everything we have learned. The best way of covering the most material is to lecture. Many professors probably still believe that the conveying of content is their most important contribution to learning. There is much data available to each of us, however, that would cause us to question this. We all know, for example, that there are many competent students who never hear or adequately understand much of what is actually said. Then there are others who jot down lecture facts, memorize them, reproduce them for an exam, and then forget them. This might cause one to question whether exam results are proof of learning or evidence of how well one plays a game. Many other questions about teaching and the traditional teaching model could be raised, but this strikes me as a rather unrewarding direction to take.

Beyond the professor's lectern are his students, and it is here where our concern should be. Though it sounds facetious and unnecessary to say, these are real, alive, feeling, and thinking human beings (in many cases more real, more alive, more feeling, and more thinking than many of us). On some topics they have more insight and more understanding than do we, and we have the opportunity to learn from them. Most students are at that stage where they are searching for a purpose to their lives and, if given the right conditions, are willing and able to direct considerable energy into the learning enterprise. The trouble is that the traditional model for learning into which we may force them is one designed to destroy their inherent desire, need, and energy for learning. At this point the student must decide either to get out or

stay in, but if he stays in, it is usually with the understanding that he will play the game to get his credits. Any real learning then comes only by accident rather than by design.

What should the teacher's role be? I must wonder if it would not be rewarding to concentrate more on learning and less on teaching. That is, what things can we do to enhance learning? Can environments be created (or engineered) in which real, creative learning is apt to take place? Can we help to get our students so interested and involved in learning that this significantly affects their lives? If this is to happen, it requires an entirely different role and attitude on the part of the teacher--one which is not easy for us to accept because it is foreign to much of our training and experience. It requires, for example, that we be aware of our own feelings and sensitive to the feelings of our students. Let me cite two examples which are familiar to all of us.

First, if you will, think of those few teachers who drastically affected our lives. I suppose we could call them great teachers and wish we might be able to emulate them. My guess is that, first and foremost, there was a genuinely humane quality about them, and in their sincerity they somehow looked upon each of us as a worthwhile being. They were truly interested in us, and this brought forth our good qualities. In this relationship, chances are we could relate, one to the other, openly and honestly. The teacher showed a genuine trust in us, with the result that we did not wish to violate that trust. Was there not also a sense of learning <u>with</u> the teacher rather than <u>for</u> him? Was there not another characteristic to this relationship--one of mutual respect? As students, did we not respect the intellectual capacity of the teacher? But also, didn't the teacher respect the intellectual ability of his student? From this re-

lationship, didn't we get turned on, work at learning as hard as we had ever worked at anything, and didn't we come away from that relationship as different people? In the process, had we not learned something about ourselves that helped us to grow as people and to function a little more effectively as learners?

Much of what has been related here may or may not have been true of our relationships with one or more of those very special teachers, but I suspect that if we analyze what it was that happened, there existed a strong affective component. We did not dwell only in intellectual matters, but the full involvement of our feelings and emotions gave tremendous significance to our learning. Our teacher was sensitive to this; he was a person of feelings and emotions--not a cold, unemotional, unfeeling person.

The second example is the research model we have for learning. If we think of a research project in which we have been engaged, we probably recognize this as something that held our interest, for one reason or another. It was something we needed to do--there were questions that demanded answers. So we formulated a problem, a research design, we gathered data, analyzed our data, tested our hypotheses, and drew conclusions. We wrote it up and perhaps had it published. But let's think about some of the things that happened during that learning experience. Were there not periods of extreme frustration and discouragement, and at times did we not wish to abandon the entire project? At times did we not seek out someone to talk to? Can we recall who it was we sought, and the nature of our discussion? We needed someone who was competent, but we didn't go to a person who lacked human qualities. In reality, didn't we need understanding, encouragement, and, above all, candor and openness--a colleague who would ask us questions and work with us in trying to sort out the problems we were having with our

project. We needed assistance that would help us to see through our muddle. Now we should recall the periods of joy, excitement, and enthusiasm, coupled at other times with discouragement, frustration, and despair--these were all real, yet vital, parts of the learning experience. Unfortunately, most of us have later reflected on these research projects in only intellectual terms and thus have lost some of the most important components of a real learning experience.

The point of raising these two examples is to focus on emotional, feeling, or affective components of learning. I think it unfortunate that so many of us in academia see ours as only an intellectual life, which, I submit, limits our potentialities as teachers.

DO WE HAVE ALTERNATIVES?

It is interesting to recall my teaching concerns and behavior during the past ten years. Much of my concern was on selection of textbooks, compiling reading lists, structuring the organization of my courses (that is, the order in which I would impart information to students), preparing and scoring examinations, reading term papers, and the like. Equally interesting is how little time was given to questions about how I could help my students learn. Are there some situations, more than others, where students learn? Can I reach a greater percentage of students through use of different teaching strategies? What are some of these strategies? Does this only apply to certain kinds of content material; to certain kinds of students; to certain kinds of learnings? What am I learning about the process of learning? These and other questions did not occupy much of my thought and time. I had simply assumed that the introductory course was to be taught in a lecture format, and much of my concern was on how to improve that model, rather than

seeking alternatives. Yet, within each of our departments and in the learning experience of each of us, we have seen different learning models used. I must now wonder if some of these, or variations of them, have value and applicability to the introductory courses. I am thinking specifically of seminars, field courses, independent student work, discussion sessions, and informal "bull-sessions" such as we often have in the coffee room or the local beer hall. Granted that the introductory course is different, but, if you will, think of the strategies for learning in these other courses, the kind of learning that happens, and the degree of involvement. Many professors with large classes (that is, in excess of 100) have been able to incorporate strategies other than only lecture. In addition, the use of simulation games, problem solving, working in small groups, and engaging in relevant research projects may increase the involvement of a greater percentage of students. Many who have tried find it rewarding and are unable to return to a straight lecture format.

During the 1970-71 school year, we conducted four conferences on "The Improvement of Teaching in the Introductory College Geography Course." The initial evaluation of those conferences is reported elsewhere in this group of papers by Dana Kurfman. More details about what happened are also discussed in greater length by Leonard Lansky. One of the several goals we had for those conferences was to help teachers become receptive to using (or experimenting with) alternative teaching strategies. Much resistance to this emerged during the early stages of each conference. Many explanations were given for why one could not depart from a straight lecture model, but some of the resistance began to fade away by the conclusion of each conference. It became clear to me, however, that it takes much more than a variety of teaching strategies to improve instruction. Instead, it

requires a whole new orientation of the teacher himself--toward his content, toward his students, and toward himself.

It has been mentioned earlier that one serious problem we have relates to content and our concern for coverage. The lecture method certainly permits us to cover a lot of content, and most of us believe that if we stray from this something may have to be sacrificed. This may or may not be true, depending on the strategies developed, but the fact is that we are already sacrificing a considerable amount in coverage. There are already many, many topics we just never are able to get to in a term. Then, if we think of the number of students who do not get involved, who go through the motions and play the game, as well as the ones who give up and refuse to play the game, we do not really cover very much with these people, which is not necessarily the fault of the students. Has not each of us been in that type of situation at one time or another in his undergraduate career? I think the problem is that many of us have become the slaves of content coverage and have been unable or unwilling to see that covering material and helping students learn are two different things. The first is relatively easy--follow a textbook, our own intellectual interests, or some other guide. On the other hand, if our concern is helping students learn, then we must cast ourselves in quite a different role--a role that, for me at least, was foreign, uncomfortable, and one for which I was poorly trained. But, since my graduate work, if nothing else, did provide me with a model for learning, I did not feel completely helpless. Later I discovered another problem, one that I was reluctant to recognize and one that I have not yet solved: that is, that I am part of the problem. The breaking of a behavior and attitude pattern does not come easily, and yet I find for myself that this is essential if I am to interact with students in a way that I can assume a role of helping them to learn.

The conferences during 1970-71 attempted to give us all a learning experience, and we frequently called attention to the analogies between things that were happening at the conference and our introductory courses--such things as our conference (course) expectations, trust in the staff (teachers), encouraging openness, dealing with feelings when they emerged, getting participants (students) involved in helping to decide what we should do next, and so on. Each of the conferences went through a predictable sequence of moods: initially, curiousity about what was going to happen; then resistance or hostility to what did happen (each of the four conferences began differently, but regardless of how we opened, the resistance came); and next dealing with that resistance and trying to resolve it. The experience of these phases was a learning experience in itself. The sequence of events is a normal part of learning, but instead of permitting a climate of trust and openness to prevail where these feelings of frustration and hostility come out and are resolved, most of us prefer to ignore them. Here we lose an opportunity for learning, for the students and for ourselves. This is where teachers need to be more humanistic if they are sincerely interested in helping students learn. It is this component, I believe, that distinguished those few special teachers of ours. Great teachers do not deny either their own humaneness or the humaneness of their students.

The point of this paper, I presume, would be the hope that geography professors become more concerned with their role as learning facilitators. If this is to happen and become effective, it is necessary that both teachers and students take off their traditional masks and begin interacting as human beings. This is what Third Force Psychology is much about. By definition it is a humanistic psychology and thus relates directly to humanistic teaching. A comment about it, with a quote from Abraham Maslow,

seems a fitting close for this paper. Its stress has a positive note in the humaneness of people, but recognizes that much attention must be given to permit such qualities in people to flower. Maslow comments in the preface of his final book, Toward a Psychology of Being (2nd ed. New York: Van Nostrand Reinhold Co., 1968. p.iii):

> This psychology is not purely descriptive or academic; it suggests action and applies consequences. It helps to generate a way of life, not only for the person himself within his own private psyche, but also for the same person as a social being, a member of society. As a matter of fact, it helps us to realize how interrelated these two aspects of life really are. Ultimately, the best "helper" is the "good person." So often the sick or inadequate person, trying to help, does harm instead.

GEOGRAPHY AND GEOGRAPHIC EDUCATION: PARADIGMS AND PROSPECTS

A. David Hill
University of Colorado

My question is: "Are today's ideas and events in geographic education a part of a more general pattern of development in geography and education; did they evolve from some recognizable antecedents and are they likely to be related and responsive to probable future developments?" There is a practical reason for exploring this question. Several signals tell us that American academia has reached the end of a period of affluence and growth. We need new guides to track in a new environment, one in which our reflexes learned from the past are likely to prove nonadaptive. Thus, this paper is a stock-taking to try to see from whence we've come and, with some foresight, I hope, an attempt to get a glimpse of where we're going.

The concept of paradigm seems useful in organizing these ideas and events. As used by Thomas S. Kuhn in his book The Structure of Scientific Revolutions (1965), a paradigm is a set of ideas and methods that guide what we do or try to do at any given time. Numerous people in a field subscribe to its assumptions and see it as a distinct set. We attach to it labels, easy referents, so as to quickly communicate our orientation to that paradigm, as against some other. And, depending upon our individual sense of agreement with, or our understanding of, the paradigm, these labels often carry either positive or negative connotations.

It seems to me that today's ideas and events in geographic education can be considered a focus for an emerging paradigm, one which can be compared

with, and in some ways developed out of, an earlier paradigm in geography which characterized the field in the 1960's.

The referents for the leading geographic paradigm of the 1960's were "theoretical geography," "the quantitative revolution," "spatial analysis," and that grand and now familiar one, "the New Geography." The New Geography and its heroic New Geographers were introduced to the readership of Harper's Magazine by Peter Gould at the end of the decade--six years after Ian Burton had argued in The Canadian Geographer (1963) that the quantitative revolution had become conventional wisdom in geography. Gould described the new research ideas that had, in his words, caused the field of geography to "explode." He also saw fit to mention, as partly illustrative of the New Geography, the curriculum development work of the High School Geography Project. It is instructive that he did not report any significant changes in the style, assumptions, purposes, and strategies of teaching geography, for there was indeed little evidence of such changes in 1969. All three of these--research, curriculum development, and teaching--are useful to consider in an assessment of the paradigm of the 1960's.

THE PARADIGM OF THE 1960's

The Quantitative Revolution

That set of ideas, methods, and orientations associated with the referents "quantitative" and "theoretical" geography constituted the major research focus of what came to be known as the New Geography. Although the "spatial analysis" school of research saw the greatest activity and generated the most enthusiasm and controversy, quantitative and theoretical orientations were not limited to spatial analysis studies. Research in the other geographic "traditions," a la Pattison's Four Traditions, also showed a

growing penchant for theory and quantification, if not with the same revolutionary zeal as among the spatialists.

Those geographic researchers who focused on quantification, model building, and abstraction quite clearly gained a new pre-eminence in the profession and formed the core of a new paradigm. The spatialists, especially, were a tightly knit group of people who communicated intensely among themselves, shared the same set of assumptions, goals, skills, and tools, and built energetically upon one another's work. A classic example of a radical reference group, they were the heroes of the New Geography. They reached out especially to mathematics, statistics, and economics, and thus economic geography was most centrally affected by the new paradigm. Change came by looking beyond the traditional boundaries of their discipline.

Although the quantifiers (a label not always connoting approval) may not have had the explicit goal of defining a new consensus on what was to be the legitimate subject matter of geography, their research, as well as their methodological pleading, clearly moved geographers in the direction of reductionism. As conscious revolutionaries, they were relentless and frequently abrasive in taking to task traditional approaches. Encyclopedic or descriptive geography was labeled an anathema to <u>scientific</u> progress in the discipline. Instead, theory, scientific problem-solving, and "core concepts" were to be emphasized. Geography, as a <u>science</u> as opposed to a body of facts, was now to be described by reference to these core concepts. Spatial distribution, spatial association, spatial interaction, spatial diffusion, and spatial organization became the fashionable key words of the new reductionism. And, of course, the spatial aspects of phenomena were to be analyzed by quantitative measures with statistical probabilities expressing the degree to which confidence was to be placed in the results.

This research component of the paradigm of the 1960's had, in my view, three important effects on geographic subject matter. First, reductionism was epitomized in new abstract work on spatial theory, closely tied to topology and performed by a few mathematical geographers. Central Place Theory, which received the most elaboration, became a sine qua non for subject matter in a "modern" geography course--to avoid the epithet of "traditionalist," the professor had to keep his students abreast of the cutting edge of geographic knowledge.

A second effect of the new research was an expanded range of what was to be considered legitimate subject matter in systematic geography. Phenomena which previously had not caught the imagination of geographers became data for geographic studies. Since any and all features from abacuses to zithers have spatial distributions, the range of possibilities for quantitative spatial analysis boggled the mind. As much as the A-to-Z list of data might connote a throwback to the encyclopedic appraoch, a guiding principle of the paradigm was that these phenomena per se were not to be construed as having intrinsic interest for scientific geography. Rather, significance was gained by what could be learned about spatial processes in the course of working with such phenomena. Although by no means new, the idea that geography was not a phenomenological science, but rather a dimensional one, gained ascendancy among professional geographers in the 1960's. The idea was and still is a difficult one to introduce to the larger society, steeped as it is in "capes and bays geography."

A third result, shattering to many geographers, was the denigration of traditional regional geography. Pounded by concerted methodological attacks from the avant-garde, the prestige of regional studies (and regional geographers) withered markedly. It was the encyclopedic bent of traditional

regional geography which suffered the heaviest blows. The regional concept *per se* was not universally held to be worthless, and even a few of the revolutionaries worked hard to try to develop a quantitative and theoretical regional geography. However, the over-all effect of the New Geography was to elevate the status of systematic geography at the expense of regional geography. It became professionally safer to specialize in the geography of air transportation, or of retail shoppers, or even of manure than to concentrate on the geography of the United States, Brazil, or Viet Nam.

Finally, we should recall that, while some of the research and scholarship of the New Geography was of high calibre, there was also some which reflected a naive scientism. Some geographers, either through lack of understanding of the fundamental ideas of the new paradigm or simply over-zealous with technique, applied quantitative methods to problems which, if not totally foolish, were of highly questionable value.

The New Geography demanded a new geographer. Of course, people face changes in different ways. To be expected, some geographers, trying to keep themselves from being washed ashore by the waves of change, struggled to learn statistics, matrix algebra, calculus, and computer programming. *The Science of Geography*, a prestigious volume prepared by a blue-ribbon NAS-NRC team in 1965, advocated second Ph.D.'s for geographers who wished to advance their science. I would like to know how many people took the advice--few, to my knowledge. If the professors did not subject themselves to radical retooling for the New Geography, they could at least demonstrate their "responsibility" to their students by forcing them to take the right medicine, usually by sending them to doctors in the mathematics and statistics departments on campus. Also to be expected, some geographers demonstrated finesse in denying the existence of or the need for change. Many others,

I assume, paid only lip service to the New Geography, the genuflection expected from people who wish to be regarded as up-to-date but who lack the inclination, fortitude, or talent to make difficult changes themselves. And the fear of failure must always be dealt with.

The 1960's was a decade of affluence and growth for academia, and the size of geography programs increased markedly, trying to keep up with the precipitous rise in student enrollments. Established geography departments doubled (or more) the size of their faculties and entirely new departments were created in both new and old institutions.

These pressures, coupled with the demand to teach the New Geography, placed the New Geographers and their mirror-image graduate students in a seller's market. In training numbers of New Geographers, the graduate departments had not kept pace with the increased demand, and those young Ph.D's who had the requisite training were showered with lucrative offers beyond their wildest dreams, often much to the chagrin of the older professoriate. Ian Burton had allowed that "when you are involved in a revolution, it is difficult not to be a little cocky." The market conditions must surely have strengthened the New Geographers' conviction that they were indeed the chosen people. Egos get strong shocks when significant changes in human affairs come rapidly, and the geographic profession had probably never before witnessed a time when some egos were so badly trampled while others soared.

Front-and-Center, but with Rigor!

While radical ideas about teaching and learning were incipient in the 1960's, the general mode of teaching repeated traditional patterns. Even though the subject matter changed as the New Geography was brought into the classroom, philosophy, or at least methods of teaching, did not change

perceptibly. The new content was taught in much the same manner as was previous content--by the front-and-center lecturer. There was little evidence of fundamental changes in teaching methods, goals, teacher-student roles, or in assumptions about the process of learning. The rigor of the New Geography was substituted for the old geography, but still within the framework of the traditional classroom.

The revolutionaries of the 1960's, as with subject matter specialists of the past, attached a low priority to the question of how to teach. In fact, some dissenters might say that much of what passed as theoretically or quantitatively sophisticated New Geography was not worth teaching! Rather than paying attention to ideas as subject matter to be taught, many heroes of the New Geography implicitly assumed that if it was new--on the cutting edge--it would and should be taught. To devote one's time and energies to the problems of teaching was generally considered less worthy than to do geographic research. (Of course, the earthy wafts of geographic education could not be inhaled in the rarified atmosphere of graduate departments of geography.) The "dichotomy" between teaching and research and its attendant reward structure was strongly entrenched in the 1960's. Near the end of the decade, however, it showed signs of losing its grip in the face of increasing attacks by students and a handful of other critics.

The New Geography Translated

Curricular changes in the 1960's aimed at translating the New Geography for both the schools and colleges. Course offerings by many geographers at the college level reflected the New Geography's disaffection with regionalism. Regional courses were given less frequently than in the past or were entirely dropped from the curriculum. New systematic courses were introduced and quantitative methods became standard fare in most graduate

programs, sometimes evicting such traditional skill courses as cartography and field techniques. Some departments instituted for their undergraduate majors requirements in statistics and mathematics. A few departments made top-to-bottom changes in their curricula and, where possible, in their faculties in an attempt to present, on a clean slate, their versions of the New Geography.

Curriculum materials needed to be improvised. Instructors had no textbooks adequate to the new content. The New Geographers, engaged as they were with their research, did not take the time to write textbooks; such activity was generally considered an unproductive use of a scholar's time. The long lag between the generation of ideas and their appearance in textbooks was also a factor. Since the only textbooks available were written to convey the conventional wisdom of the past geography, the New Geographers turned instead to using for their classes journal articles and whatever fugitive materials they could get their hands on. This may well have been a significant turning point in geographic education, in that the iron grip of the textbook on both the student and teacher was broken, at least temporarily.

It is interesting that we have seen appear only in the past couple of years the first college textbooks of the New Geography. One might infer that a new content plateau has been reached. The New Geography is indeed the conventional wisdom when it appears in textbooks!

The 1960's were also significant in geography as the decade of the High School Geography Project. A heretofore unprecedented program, the Project spent some $2.5 million of federal money, was sponsored by the Association of American Geographers, which previously had paid very little attention to pre-college education, and involved the efforts of several

reputable professional geographers working with non-geographer educators. Subsequently heralded by social studies advocates as one of the most substantial and innovative products of the "New Social Studies," HSGP represented the profession's effort to translate the New Geography for the secondary schools. A more fascinating and extensive discussion of the Project than can be given here is contained in HSGP's Final Report, From Geographic Discipline to Inquiring Student (1970). Its title nicely evokes the historical development (and learning) of the decade-long venture.

In a decade of such rapid change in the content of geography when methodological confrontation was the order of the day, it is no small wonder that the Project's materials ever reached publication. Symptomatic of the field as a whole, the Project was rocked by intra-tribal warfare, but it emerged as a monument to tenacity, ingenuity, conflict resolution in some areas, and more trampled egos in others. From what we have noted about other parts of the paradigm of the 1960's, it is not surprising that the HSGP materials have a strong systematic bias--only one unit of six has a regional focus, despite strong arguments from powerful voices for regional geography. The materials' emphasis on systematic geography has no doubt presented considerable difficulty to most school teachers, since their training had usually stressed the regional approach.

HSGP accomplished significant original work in the areas of teaching-learning strategies and materials evaluation. Stressing teacher and student feedback on the trials, the Project tested and revised to make the materials teachable and appealing. It is noteworthy that try-out students and teachers appeared to like best those parts which they perceived to be least "geographic" and most interdisciplinary. Quite negative feedback was directed at those aspects which were the most theoretical, abstract, and quantitative--

that is, the materials which seemed most to reflect the reductionist essence of the quantitative revolution. The result was that some of the quantitatively rigorous, arcane, or abstract notions of the New Geography, especially those epitomized by the spatialist sect, were either severely minimized or scuttled entirely. The case might be made that these ideas and methods were too advanced for the training or capacities of the secondary teachers and students. However, it is also likely that some of these ideas, when translated and then tested out on students, proved to be not worth teaching to them.

In general, the materials that survived to publication were those that worked in the classroom trials. The Project learned that the crucial test was not content alone, but content as taught. That the material was new and exciting to the professional geographer was necessary but not sufficient. It also had to be meaningful and appealing to the students and teachers. The Project's experience underlined a simple but often neglected truism: that which stirs the soul of the professional specialist is to others frequently meaningless, silly, or boring.

Without disparaging the geographers and their ideas, I think it is safe to say that they could not have succeeded with HSGP on their own. It is to their credit that they came to realize this and enlisted ideas and people from education, psychology, and other fields. Non-geographers injected important ideas on learning theory, teaching strategies, and materials evaluation. The interdisciplinary teaching and learning experienced by those individuals who worked on the Project was, I think, one of the most positive and unheralded impacts of the entire enterprise. The chain of lives affected because of that experience is sure to lengthen in years to come, thus causing considerable improvement in geographic education, if not education

in general. It is significant that near the end of the decade much of the Project's work shifted into the hands of non-geographers. That the last Director was a non-geographer partly reflected the nature of the final phase of the work, which was basically editing and teacher education, but it was also symbolic of an interdisciplinary effort.

It is also significant that the final year of the Project was heavily devoted to the production of the Teacher Education Kits. These were developed to convey the important fact that, in addition to geography, the HSGP teaching and evaluation strategies can be generalized to many subject matter areas. In the early part of the decade, the idea of so-called teacher-proof materials was enthusiastically bouncing around, not only in HSGP, but in other national curriculum projects as well. But as more and more feedback from users of the materials came in, it became increasingly clear that good materials were not sufficient to the task. To be effective in the classroom, both the new conceptually-oriented subject matter and the new teaching-learning philosophy and strategies invoked by HSGP demanded a teacher radically different from the traditional front-and-center authority figure and expert. Of course, the Project personnel were not unaware of the problem of the teacher variable, and they conducted institutes and workshops to try to train the trial teachers to use the materials effectively.

Above all, what seems to me important to re-emphasize from the HSGP experience is the simple, but profound, truism--which apparently we have to rediscover again and again--that we cannot be complacent about teachers and teacher training. Brilliant subject matter research translated into expensive and creatively conceived curricular materials is not enough. It is only a beginning. The seeds planted by HSGP will, if properly husbanded, bear

good fruit for geographic education, not only at the secondary level, but, I think, at all educational levels.

THE EMERGING PARADIGM OF THE 1970's

With trepidation, I now shift into the present and future tenses and sketch the barest outlines of what I shall call an emerging paradigm for the 1970's. If we indeed have such a paradigm, we should be able to show that there is developing a set of ideas, events, and methods that guide what we do or try to do which is distinct from the earlier paradigm of the 1960's. Unquestionably, many of the characteristics of the new paradigm were incipient in the former--change never arises in a vacuum. Just as some ideas of the 1950's gained prominence and became major descriptors of the paradigm of the 1960's, so too might we expect the same process to give us a new paradigm for the 1970's.

The New Diffuseness of Research

In contrast to the 1960's, the recent trend of research by geographers appears to be very diffuse. The quantitative revolution, having finally succeeded in defining a new conventional wisdom, appears to have suffered (quite naturally, I suppose) from the lack of energy and excitement that accompanies maturity. The New Geography, it would appear, reached by the end of the decade a methodological, if not theoretical, plateau; work in that area now seems to be busy with embellishment rather than fundamental change. Thus, in marked contrast to the 1960's, the professional geographic literature of today is, not surprisingly, almost totally devoid of fundamental methodological controversy. Geographers today seem less interested and compulsive about the question "What is Geography?" This is the question to which was directed much of the quantitative revolution. Having, at least for the

time being, attained some theoretical and methodological consensus on that question, geographic researchers, with a new confidence in the core of their discipline (and perhaps some boredom with it, too), are showing a strong penchant to reach out in many directions away from that core. This multi-directional outreach leads me to characterize geographic research today as diffuse.

It is symptomatic of this diffuseness that geographers have intensified their communication with researchers in other fields, no doubt at the expense of exchange among geographers. For example, the previously tight-knit spatial theory group that generated the quantitative revolution has essentially dispersed. They communicate not so much among themselves anymore, but rather with non-geographers.

The new cross-disciplinary work seems also much more empirical than in the 1960's. Although empiricism is not antithetical to theory--on the contrary, it complements it--the inductive mode of geographic research today seems startingly different from the deductive leaps made during the 1960's. Man's geographic behavior is the subject of much of this empirical work; independent variables in their explanations are increasingly taking geographers into political science, anthropology, psychology, economics, sociology, and philosophy. The search for more penetrating explanations of geographic behavior, whether in locational or resource terms, relies today much less on normative theory than previously.

Furthermore, geographic research today is characteristically much more applied than it was in the 1960's. This may derive partly from dissatisfaction with the abstract and often arcane theoretical and mathematical geography of the 1960's and partly from the abounding pressures on the academy for "relevance." Although it has been fashionable for academics to scoff

at the relevance issue, their research behavior is beginning to suggest that they recall what happened to Marie Antoinette at the hands of the Revolutionary Tribunal after she said "Let them eat cake"! The Detroit Geographical Expedition was, until recently, a voice crying in the wilderness. But a new group of AAG Task Forces on relevant issues, perhaps co-opting the "radical caucuses," has appeared on the scene within the last year to legitimize the trend toward applied work. And a new grass-roots organization called SERGE--Socially and Ecologically Responsible Geographers--is growing rapidly. The academy today is increasingly under pressure from the larger society to become accountable to society's terms. Whether we like it or not, it is a fact which, in my opinion, will continue to shape the course of research.

The problem-oriented training which was fundamental to the New Geography of the 1960's helps equip geographers, I think, to respond positively to the challenge of relevance. A strong sense and ability to work in a problem-solving mode, essentially the scientific method, is basic to applied work on social issues. Problems will not be solved without good problem-solvers. Perhaps even more basic is the need to recognize and define problems. That ability, too, is a part of sound scientific training. In interdisciplinary efforts where diverse disciplinary languages and assumptions can be causes of misunderstanding, it is all the more crucial that problems and hypotheses be precisely related by some common denominator. The methodology of modern probabilistic science provides that framework.

The foregoing characterization of today's geographic research would seem to indicate that new paradigms are emerging. Whether or not the elements will be reoriented and sharply focused to bring us a new semblance of consistency of purpose comparable to the New Geography, it is too soon to tell. The present diffuseness is at least interesting, but to find signs

of revolutionary portent within the field today, one needs to look elsewhere.

The New Teacher as Hero

Whereas the novelty and innovation of the 1960's focused on content, thus making a new view of subject matter the cause célèbre, the emerging paradigm of the 1970's may become most noteworthy because of what I will call the "New Teacher." If those avant-garde of the New Geography were the heroes of the 1960's, the heroes of the 1970's may be the New Teachers, since I, at least, cannot yet see in the present diffuseness of geographic research a concerted locus of revolutionary change. However, the most striking innovations in the field look to me to be centering on an emerging set of ideas and orientations that aim to revolutionize the pattern of teaching geography. Paradoxically, the country cousin, geographic education, may finally find his place in the sun.

I want to try to describe very briefly this set of ideas by characterizing the New Teacher. While recognizing that such a characterization may, like a model, lack realism (Carl Sauer said in 1969 that models are our ideas of "the world as we would like it to be"), it can give us a new ideal, a new direction to follow, a new goal to strive for--all necessary ingredients for the process of change. Some of the most fundamental characteristics of the New Teacher are as follows.

Like his counterpart of the 1960's, the New Teacher is a radical in that he rejects much of the conventional wisdom about teaching from the past and seeks to establish a new structure in accordance with a new environment. He takes what may appear to be risks in order to achieve the changes he believes to be necessary. He is the inveterate tactician seeking alternatives to, if not subversions of, ascribed norms which militate against creativity and freedom in education.

He can see no simplistic formulas for good teaching. Recognizing the essentially personal nature of the teaching-learning relationship, he can only prescribe to the extent of saying that good teaching must encompass diverse styles, skills, and purposes, but, like good research, it requires sound intelligence. The choices he makes among alternatives, however, are made consciously in the light of the self-knowledge that they are compatible with his own unique qualities. He does not, however, believe that teaching is strictly an art and that good teachers are born and not made. Rather, he thinks that the teacher-training of the past, for all educational levels, has been inadequate to the needs of the present and future.

He has free and conscious choice among alternatives both because others to whom he is responsible legitimize a wide range of alternatives and because he is knowledgeable about, and skillful with, many teaching strategies, roles, styles, and purposes. His teaching behavior is not narrowly prescribed by tradition.

He is a genuinely enthusiastic and skillful experimenter with his own, as well as with student learning. One of his goals is to imbue his students with the urge to propose and test ideas and he realizes, as do his students, the hypocrisy of not practicing what one preaches.

While enthusiastic about experimentation and change, he is not a faddist. He does not unwittingly make changes and accept gimmicks just to be different or to be viewed as "progressive." He is not a sham innovator. He approaches ideas with skepticism and tentativeness, but not of a kind that paralyzes him, for he works as a good empiricist, checking with logic, evidence, and probability.

He is a skillful scientist and he consciously brings to bear on his classes his research skills and attitudes for the purpose of improving his

teaching. He is challenged by teaching because he views it as a process of continual problem-solving. He is constantly mulling over questions of teaching and learning, posing hypotheses, seeking and checking data to test his hypotheses. He not only wants to know what elements of his teaching succeed or do not succeed (this is a research problem), but also why he gets these results (which may be another research problem). His performance makes the tired debate about the "dichotomy" between teaching and research seem ever more hollow. He is a learner, consciously developing and testing theory, skills, and methods for learning. As painful as this process can be--the complexity of learning is one of man's most important and challenging questions--his engagement in it is his greatest source of professional satisfaction. As an eager learner, he has set learning about teaching at the top of his list of priorities.

Without denying the importance of his own intuition and experience, these are not, in his view, sufficient to deal with the complexities of his work. He reaches outward to students and colleagues both to test his own ideas and to find new ones. He devotes time and energy to weighing ideas about teaching and learning which come from psychology, education, philosophy, and other fields. He is in close communication, sharing ideas and materials, with a group of people that identify themselves with him first as teachers researching teaching. This is his most important professional reference group. Many but not all of them are other geography teachers. Other disciplines have similar groups. Members of these groups sense the revolutionary nature of their ideas, and they are no doubt guilty at times of the brashness characteristic of such committed people. (Having noted that the quantitative revolution came later to geography than to several other fields, it is significant that geography today has a corps of people

working to see that geography does not also lag in the "teaching revolution."

He does not guard his classroom as his personal fortress as though he were a king who need answer only to himself. He welcomes, indeed urges, being held accountable for effective teaching and he works hard at developing methods which will ensure the use of meaningful criteria for responsible evaluation of teaching and learning.

While knowledgeable about his geographic subject matter, his skepticism and tentativeness are applied also to the subject matter. He does not automatically genuflect to geographers or hold as significant for his teaching all that passes as geography. This is not an anti-intellectual stance but, on the contrary, is the very essence of intellectualism. In choosing what to teach, he works hard at trying to separate the relevant from the irrelevant, the superficial from the fundamental. His students play an important role in this process. He knows that human enterprises, geography included, have their share of sham and genuineness, of brilliance and dullness, of doctrine and dynamism, of creators and charlatans, both conscious and unconscious.

If he cannot find significant content for his teaching in the work of geographers, he will search elsewhere. He tends to be irreverent about disciplinary boundaries. Attuned to the dissonance from the increasing rate of knowledge decay, he is often in a quandary about what to teach, and his course content is always in flux. He makes careful plans for his classes but doesn't cling tenaciously to them as though they were somehow sacrosanct. The free and open inquiry in his classes often goes in unpredictable directions and into uncharted ground. And he will often build today's surprises into tomorrow's lesson, a process which yields a constantly evolving subject matter. Creative teaching does more than transmit knowledge--it generates it.

He strives in his teaching for creative synthesis between knowing and the ways of knowing, which is a process of having his students both learn the content of the subject matter and learn how to learn. Content per se is not the measure of significance for his students; rather, it is the process of content as taught. Content (what is being learned) and process (how learning is occurring) are strongly interdependent (but certainly not in a simple way). The degree of subject matter learning is strongly dependent on how well process learning is accomplished. This necessitates different teaching strategies, materials, and experiences for different content and often for different students--his experimentation centers on these interacting variables.

He is not apt to rely heavily on conventional texts and standardized curricula, but rather is constantly at work assessing and collecting teaching materials from a wide range of sources, as well as creating them himself.

It is not his purpose, nor does it fulfill his personal needs, to demonstrate to his students that he knows his subject matter well. He sees no necessary relationship between telling students what he knows and student learning. He is much more prone to ask questions than to give answers, and to direct his teaching at involving students in the process of inquiry. He does not view students as empty receptacles into which he is to pour "his" knowledge. His premise is that students bring to his classes a wealth of knowledge and feeling that he may somehow help to enhance and develop. Acquisition of information per se takes low priority on his list of objectives. Learning how to better find information ranks higher, and the ability to use it in the conceptual work of problem-solving and decision-making ranks higher still.

To have students take the major share of responsibility for their own learning and for teaching their fellow students, and to have students learn more about how to work effectively with others and thus learn more about themselves are other, equally important, objectives he holds for his classes. And he is explicit about stating his objectives to his students and encourages them to state their own, to try to develop base-points against which to gauge their learning.

He views himself as do his students--as a facilitator of learning, rather than as the resident authority figure and expert. In his classes, students are encouraged to challenge ideas, including his own. The measure of worth of an idea is not first and foremost the source from whence it comes, whether from the teacher, a textbook, or whatever, but it is rather whether or not it stands the test of logic and evidence. And evidence need not always be of a concrete, objective nature. Much of the richness in human experience involves values, attitudes, and feelings. Such so-called subjective evidence is legitimized (encouraged) in his classes. He does not try to hide his own values and feelings or to avoid ethical questions, not because he seeks to indoctrinate with his own views, but because he believes that students (and himself) can and should develop in affective as well as cognitive learning. This is not a simplistic relativism that holds that any attitude, feeling, or value is as significant as any other. On the contrary, its premise (from axiology) is that all of these should be subjected to thoughtful criticism, particularly with reference to their sources and past and probable future manifestations.

He believes it is crucial to have students take a great deal of personal responsibility for their own learning. His students are encouraged to participate in discussions and decisions about course objectives, structure, procedures, learning materials and experiences, and in evaluation both of their

own learning and of the quality of instruction which he is responsible to provide.

Finally, he trusts his students to learn, and they trust him to facilitate their learning; more often than not, this is in fact what happens because his classes operate on the bases of intensive communication, genuineness, experimentation, personal responsibility, open critical thought, and mutual support and respect. These qualities teach confidence and self-knowledge, as well as the concepts of the subject matter. They provide support for human beings faced with the risks inherent in change, and the essence of learning is change.

All of the above--and the characterization is by no means complete (it should never be)--is in the wind, in the professional and general literature, in conferences and workshops, in private conversations. But the New Teacher is still new and his numbers are relatively small. His "teaching revolution" is by no means secure and it will be fraught with problems similar to those which faced the quantitative revolution. In fact, the teaching revolution is less assured of success than its predecessor because it threatens, in a much more fundamental way, the established order and the selves that find security in that order.

Geography in the 1970's has a new confidence, born of the paradigm of the 1960's. The theoretical work of the New Geography is now being applied to diverse and interdisciplinary research problems in what is now a diffuse pattern rather than a clearly defined paradigm. These antecedents have combined with other forces both within and beyond the field to foster a new realism in geographic education--a set of ideas and methods that signal the beginnings of a new paradigm, one which, like the earlier paradigm, demands new qualifications, new skills, knowledge, and instincts. The teaching

revolution will succeed only if the profession as a whole reaches higher and different standards in geographic education for all levels of the system. The mode of geographic education of the past, from the grade schools to the graduate departments, is not up to the job. We shall need responses adaptive to the new environment.

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STRATEGIES FOR RELEVANT LEARNING SITUATIONS IN PHYSICAL GEOGRAPHY

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INTRODUCTION

At a time when society is concerned about things environmental, the content of physical geography is especially relevant. However, the more familiar and real the material being learned, the less real is the situation in which it is being taught. This is less a problem in physical geography courses that involve a measure of "fieldwork" and in colleges that encourage independent and group work as part of the regular term or in a mid-term period. This paper examines the constrained learning situations presented by the modern university and large introductory courses. The constraints are assumed to be bad, unreal, and non-relevant. Thus, strategies are discussed that have been used in an introductory physical geography course to make the learning situation as relevant as the material being presented.

Two additional assumptions govern the ideas and procedures outlined in the paper. First, we assume that teaching people how to learn--that is, utilizing information to reach an objective--is more important than telling them what to learn--that is, transmitting information. Second, we assume that practice at problem-solving is crucial if formal education is to be of use when that type of education ceases. This is especially true in the context of present environmental problems, the discussion of which is beginning to receive more and more attention in physical geography. Learning how to learn and problem-solving are related, but the present learning situation in many courses is not conducive to either.

Although it is dangerous to generalize about learning situations, those associated with courses at the freshman-sophomore level are relatively uniform. Lectures, textbooks, laboratory exercises, and examinations are the most frequent components. These components are not necessarily bad. Most often it is the way they are used that is undesirable. The constraints on learning include more than the four walls of the classroom. Included are: (1) the barriers to communication between students and between students and instructors, nurtured by a competitive grading system and the character of the academic situation the instructor exists in; and (2) the placenta-like veil that separates the student from reality and from other segments of the community.

Content (course material) and strategies (course structure) are not unrelated. The content of physical geography provides an excellent vehicle for the strategies discussed in this paper, and vice versa. Atmosphere, lithosphere, hydrosphere, and biosphere are all about us, even in the megalopolitan environments of the majority of our citizens. They are most easily perceived where a problem plagues their character. With careful direction and supervision, recognition of this problem should lead to an understanding of the basic factors contributing to it, including processes and elements in the physical-natural environment. The strategies discussed are aimed at aiding in this process of moving from the specific to the general and back again. In reality, a vast collection of resources and sources of information are available to aid in this problem-solving process. In university learning situations, we deny the use of many of these resources, thereby constraining the process.

The manifestations of many of the strategies discussed in the paper will be familiar. They appear in activities such as lectures, laboratory

exercises, discussions, readings, papers, and so forth. The purpose is not to question the institution. Rather, it is to question the way it is being used. A fourth assumption underlying the ideas expressed here is that each activity or course component should have a separate and contributory role to play in a given course.

The strategies outlined in the paper have been applied in an introductory physical geography course (see Gardner, 1971, pp. 163-168). Many of the typical social and physical environmental constraints are present in the university and have been in the course. It is only fair to note that many constraints are not present, or at least are not blatant. Considerable freedom and encouragement exists for experimentation in course content and teaching strategies. The course has not been large, with about 150 students per semester enrolling. The university has well-developed library facilities, the department has innovative graduate students who aid in the presentation of the course, and the community in general is replete with talented and informative people.

THE TYPICAL CONSTRAINTS

A number of characteristics of formal education strongly influence the physical and social environment in which college courses are offered. The prospect of higher education for large numbers of people, the quest for efficiency in doing this, and the grading of these people have engendered severe constraints on the practice of teaching at the college level. Additional constraints come from the academic environment of which the instructor is part. Although the paper is primarily concerned with the former, a brief comment on the academic environment must be offered as a qualification.

The academic community has stressed research and teaching. Through a reward structure that reflects a fascination with mechanization and techno-

logical development in society generally, research has come to be honored over teaching. Ideally, at the college level, both should be highly interrelated. In practice, teaching has come to be perceived as an impediment to productive and competitive research. "Efficiency is teaching," meaning teaching that takes as little time as possible, has come to be of paramount importance to the individual who wishes to advance in the academic community. Unfortunately, learning does not seem to be an efficient process and is incredibly time consuming. Those we teach are rarely given the benefit of this fact, either in individual courses or in the way their undergraduate programs are packaged. Time is an important ingredient in learning, as evidenced by the time devoted to research--research being a learning process. The academic system does not accord the same luxury to those other learners, the students.

Those large numbers of students are one of the major physical constraints in the learning environment. The large numbers, coupled with the quest for efficiency in dealing with them, have reduced the number of meaningful interpersonal contacts. This includes face-to-face contacts between students and between students and instructors. In addition to being "dehumanizing," this severely constrains the flow of information between individuals. Since we assume that individuals are valuable sources of information and insight and therefore part of the learning experience of all other individuals, this can only be viewed as undesirable.

Another major physical constraint is the four walls that contain a normal classroom. It is difficult to see relevancy, despite the material being discussed, if one is physically separated from the elements, problems, and issues of the world. Many processes may be simulated in a classroom or laboratory situation. In fact, for some processes this is the only situation

in which they may be effectively observed and understood. However, for just as many processes of concern to the earth and social sciences, the classroom, in the presence of a multitude of other bodies, is not a situation conducive to learning.

Competitive grading, which is a hallmark of many college courses at all levels, provides further constraints, especially in the socialization process. First, competitive grading discourages meaningful interaction and transmission of information between students. In other words, the probability of them learning from each other is diminished. The competitive spirit encourages the hoarding of information and ideas, rather than their dissemination. This is to deny an important resource, the knowledge personified by a group of students, from being utilized to the benefit of the group. This is a grossly anomalous situation at a time when the understanding and utilization of the physical-natural environment demands teamwork and cooperation.

The concept of cheating (and the mythology that has grown up around it) is directly related to the competitive grading system. Cheating is a creation of the system and its practice is purely a type of logical behavior (Glasser, 1969). Cheating is, after all, the utilization of external resources that, for various reasons, have been made taboo. Outside the examination situation, an integral part of the problem-solving process is the marshalling of as much information as possible. It is true that some problem-solving situations require immediate responses or are devoid of external information sources. However, in an era of rapid communication and an expanded communications technology, these situations are increasingly exceptional. A major emphasis in this paper is that our system of formal education, specifically at the college level, is made artificial by constraints

that make information unavailable, and therefore does not give practice in the recognition and utilization of information sources.

Both students and instructors must deal with these and other environmental constraints. The constraints are making the college learning situation increasingly irrelevant at a time when there is a trend toward more relevant content. Although the foregoing description may be overdone and not entirely applicable to all cases, it is not entirely a field of quixotic windmills. And it does provide the basis for many of the strategies described in the paper. Moreover, the strategies may be worth exploring, even if the constraints do not exist.

THE CONTENTS OF PHYSICAL GEOGRAPHY

Prior to outlining the strategies, some discussion of the content of physical geography at the introductory course level is of value. The content of most courses has been relatively well defined and perhaps even static for a number of years. This is relative to the rapid changes and probes at new material that have characterized human, social, economic, and urban geography courses. (See, for example, Rumage and Cummings, 1967, pp. 114-166.) This, in turn, is a reflection of some of the rapid changes that have occurred within the discipline of geography (see Kohn, 1970, pp. 211-219). With a few exceptions, physical geography retains close ties with other earth science disciplines and its changes partly reflect changes in those disciplines as well.

At a time when society is concerned about the quality of its physical-natural environment, the content of physical geography is implicitly relevant. The characteristics of, and processes operating in, the atmosphere, biosphere, hydrosphere, and lithosphere are at the heart of many environmental problems. Although implicitly relevant, some attempt is necessary

to make the material in this or any other type of course explicitly relevant. There have been several recent attempts to do this through slight changes in course content and areas of emphasis. In a previous paper, I described one such attempt wherein the content included a discussion of the "man element" and emphasized environmental problems (Gardner, 1971). More recently, an introductory course based on "life geosystems" has been designed and implemented (Kakela and Christopherson, in press). Undoubtedly there have been numerous other attempts to do much the same thing.

Changes and reorganization of content are only part of the instructional effort at any level. The learning situation and social environment contained therein must be relevant to reality as well. With this in mind have the strategies discussed in the following section been explored.

STRATEGIES

The primary objective of the strategies or exercises discussed here is to give students practice in problem-solving and in the utilization of information to that end. The conveyance of a well-defined body of material is not a primary objective; nevertheless, this happens as part of the process. What follows is a narrative of the ways old institutions (such as lectures, labs, discussions, readings, papers, and examinations) have been used to reach the objectives. In some cases, the desired ends or objectives have been carefully predefined, in other cases, desirable results have occurred by accident. A fifth assumption that underlies much of the thinking in implementing the strategies is that the students possess a considerable amount of non-institutionalized knowledge of many of the topics discussed. We do not assume they are individually or collectively a void in this regard.

Lectures

It is very easy to have lectures do nothing but circumscribe and transmit

course content or the "material." (See Undergraduate Instruction in Arts and Science, 1967.) With the availability of good textbooks, which has been the case in physical geography for some time, the lecture often becomes little more than an image of the book. Rather than material, the lecture should convey a process--the process of addressing a problem, marshalling information about the components of the problem, explaining the occurrence of the problem as a consequence, and examining possible solutions to the problem. As such, the lecture would be a demonstration of a practiced individual going through a problem-solving process. This may be one good reason for having research-oriented and trained individuals involved in teaching. It is partly a matter of convincing teachers to apply the same rules to teaching as are applied to research. Both involve trafficking in knowledge.

If the lecture is to be a demonstration of problem-solving, each lecture should be as self-contained as possible. While utilization of previously discussed concepts and material is essential and desirable, we have found that a lecture beginning with a problem and ending with a conclusion related to the solution of the problem best meets the objectives of the course.

In addition, the lecture should portray the character and personality of the instructor. This is an important socialization process that can be very personalized. We have found that this is extremely important in setting the tone for the course and in influencing the type and amount of student-teacher communication. This is enhanced further by a conscious effort to utilize information extant in the class through questions built into the lecture. Individual students become directly involved in the problem-solving process in this way.

The lecture should provide the instructor with the opportunity to display enthusiasm for the process and the material. This is thought to be desirable, on the assumption that enthusiasm begets enthusiasm. A display of enthusiasm is one more step in breaking down the traditional walls between the student and teacher that heighten the perception that "teacher is omnipotent and something other than human."

Laboratory Exercises

Laboratory exercises have been an important element of most physical geography courses. Our purpose in using exercises has been much the same as the traditional purpose, which is to familiarize the student with data and have him manipulate it, display it, and make inferences from what he sees.

As with the other components, the laboratory exercises have a socialization function. Students have been asked to work on exercises in pairs or groups, such that the completed exercise is the result of several people's deliberations. Initially, this is important in transmitting the fact that students are not competing with one another for grades. It emphasizes the notion that the more minds there are working on a problem, the more likely a good solution will be found, and the higher will be the quality of the work. Grading is based on the latter. Cooperation, rather than competition, is emphasized as well in other elements of the course. However, the laboratory exercise is one of the initial vehicles for transmitting this spirit.

Readings

Reading material suggested, provided, and assigned to the students is of two types and serves several purposes. One type emphasizes content in the textbook tradition. Students are asked to use a major physical geography text as a reference to extract the meaning of concepts and in understanding physical processes. Nothing in the other components of the course serves this function.

The other type of reading is of a more popular mass-consumption flavor. "Doomsayer" environmental books and articles have been used. The purpose is to incorporate into a formal structure information that large numbers of people (including students) are exposed to. Hopefully, students are, as a result, able to treat it more objectively and critically. Associated with this type of reading are television shows, public lectures, and newspaper and magazine articles. These are media that constantly transmit information relevant to the content of the course and are media that students must deal with continually outside the course. Our purpose is to give them practice in making the best use of it. Moreover, we have found that this type of material often provides a stimulus and the fodder for discussions.

Discussions

The main role of discussions is as an outlet for student thought and opinion on issues relevant to the course. Discussion groups (15 to 35 students) are held alternately with laboratory exercises, partly to break the tedium of busy-work associated with the exercises. The discussions are held some time after the students have been exposed to lectures, an exercise, and some readings related to a topical area--the role of regional weather systems in creating air pollution episodes, for instance.

Few constraints are placed on the material discussed and how it is discussed. In many instances, the discussion is of more value as a socialization experience than as a material-learning experience. To counteract this, a special type of group interactive process, variously referred to as a role-playing game or scenario, is introduced at a specified point in the course.

Scenario

The role of the scenario is much the same as that of the discussion. However, greater emphasis is placed on content and cooperation in reaching

a goal. At the beginning of the scenario process, which takes place over several weeks, an issue is defined. The introduction of a nuclear power generating facility would be an example. Interest groups or roles are delimited on the basis of the issue. Using the nuclear power plant example, one may imagine at least four interest groups, including: (1) the power company that wishes to construct the facility; (2) an activist group concerned with possible environmental damage; (3) a group of farmers on whose land the facility will be built or whose land will be adjacent to the facility; and (4) a group of citizens from a nearby town that has experienced frequent "brownouts." Groups of students within the discussion group simulate the roles of the various interest groups. The respective positions are researched and arguments are prepared, taking into consideration probable points to be raised by the other interest groups. The issue is then debated in a formal hearing. At this point, the arguments may be summarized and "published" for the whole class to peruse. This may be followed by a referendum to either accept or reject the proposed facility.

A major objective of the scenario is to have the students cooperatively research an issue and define a position which they must defend. Emphasis is placed on the utilization of a wide range of external resources, including so-called "experts" in the field. The purpose of this is to demonstrate that the community contains an enormous variety of resources beyond those normally associated with the college learning situation. Again, practice is given in working cooperatively, and grading is based on the cooperative result.

Research Paper

The choice of a topic for a research paper is left up to the student. The paper is designed as a medium for individual expression as a respite

from the emphasis on cooperative efforts. Emphasis is placed on the formal presentation of a problem and research (library or original) directed to its solution. Again, utilization of a wide range of information sources is encouraged. Organization, grammar, sentence structure, use of support material in the form of tables, maps, graphs, and so forth, and proper acknowledgment of sources of material in the final paper are all stressed. Originality in problem definition, content, and presentation is at a premium, and students are made well aware of this prior to starting the paper.

Final Examination

The final examination is only an examination in the sense that it tests the ability to utilize skills, including the integration of information, practiced earlier in the course. This exercise is an attempt to simulate a real problem-solving situation that the individual could be confronted with. Of course, the content of the problems relates to the content of the course and often relates to some current event or issues as well. The following is an example of one such problem.

> As an agricultural specialist with the Peace Corps in a small developing country, you have become concerned by the planned intrusion of an American-Japanese mining consortium. They are planning to begin contour strip-mining operations on coal deposits in a hilly but fertile area on the west coast. You recollect reading Caudill's Night Comes to the Cumberlands when you were an undergraduate and vividly remember the plight of the Appalachian folk as a result of some similar operations there.
>
> Your concern is in two related areas. First, you're interested in possible damage to the natural environment. Second, you're very concerned about the effects this would have on the agriculture of the area and hence, the social characteristics of the area. After collecting evidence on the environmental impact on surface mining during your spare time, you prepare a long substantive letter about your concerns and send it to the director of the Peace Corps for the region.

This exercise is alloted a week or ten days. The student (if the exercise is phrased in the singular) is asked to play a role and address himself to an issue or problem. The role and the problem circumscribe the informa-

tion that is required, but the information and advice may be sought from any source, including other students. Hence, cheating is not an issue in this system. Plagiarization is. The final product is some form of document, either a report, letter, paper, strategy, or plan. Since the role always demands that the document is to communicate a position to some other person(s), it must be carefully prepared and presented.

Individual Discussions and Tutorials

A less formal strategy involves individual discussions, counseling, and tutorials. The principal instructor and the teaching assistants maintain an open-door policy. Enunciation of this policy is not enough, however. Students are requested to attend an interview early in the course. Priority is given to freshmen in this regard, on the assumption that they are least likely to make individual contacts on their own volition. The initial interview is primarily a socialization meeting. The interview and the character of it are designed to convey the idea that the instructor is indeed available. His availability, and that of the assistants, extends to their use as resource persons during the final and other projects. This commitment consumes enormous amounts of time but is well worth it in terms of making the teaching experience a humane one. This, in turn, provides a vehicle for the effective transmission of information and the learning of a problem-solving process.

TIMING

The appearance of the strategies as the course progresses is not random or haphazard. Timing is extremely important if the experiences are to build on one another as they are meant to. The interviews discussed in the preceding section should take place early in the course to "open the doors" while there is still time to benefit from such a policy. Lectures,

discussions, and readings are more or less constants in the course. The competitive spirit is attacked early, when students are asked to work in pairs or small groups during the laboratory exercises. Whatever group cooperation results from this is of value in the scenario which takes place midway through the course. This, in turn, provides practice in the utilization of a wide variety of resources and the expression of opinion, which are of use in the production of the research paper.

In the meantime, material from previous laboratory exercises, discussions, and lectures is being incorporated into succeeding exercises. One purpose of this is to demonstrate the interrelatedness of elements and processes in the physical-natural environment. The final laboratory exercise demands the discussion of a large number of interacting variables in a given context. This systematic or ecological perspective should be applied in the final project. Coming at the end of the course, the final project should demonstrate an ability to utilize all that has gone before.

CONCLUSION

The purpose of this paper has been to discuss some learning strategies that have been applied in an introductory level physical geography course. Although the strategies are manifested in some traditional institutions such as lectures, labs, discussions, readings, and so forth, the ends to which they are directed differ slightly. The course content emphasizes the study of processes in the physical-natural environment and some of the problems that arise when man interacts in the processes. The desired behavioral outcome of taking the course is some facility with the problem-solving process, especially as related to environmental problems. To reach the desired outcome, the course attempts to simulate real problem-solving situations. However, to do this, some serious constraints endemic to

college and college courses must be removed. To avoid continual exposure in large groups, opportunities are provided in several ways for interaction with the instructor in small groups and on an individual basis. More important are the attempts to remove competitive grading and the competitive spirit that arises from it. Competitive grading constrains the use of the peer group as an information and idea source in the problem-solving process. Continual emphasis is placed on the utilization of a wide range of resources in all components of the course. Students are encouraged to move beyond the course and information specifically associated with it, to other people, literature, and data in the university, community, and beyond. At no time are information sources specifically limited, as in the traditional examination setting. This is considered to be a closer approximation of reality, especially at a time when vast amounts of information move rapidly and accurately over long distances. A basic assumption is that effective problem-solving requires teamwork or cooperation among individuals, recognition of information sources, extraction of the appropriate information through pertinent questioning or measurement, analysis and discussion of the information, formulation of a statement, plan, or solution, and the presentation of this in a form comprehensible to others. The strategies discussed in the paper attempt to nurture and provide practice with this type of behavior as it relates to issues relevant in physical geography.

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RECYCLING AN OLD STRATEGY--
THE FUNCTIONS OF A PROBLEM-ORIENTED FIELD SEMINAR

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ABSTRACT

Despite curriculum changes designed to facilitate active student participation in the learning process, there is little evidence of a revivification of the field course as a means of instruction. Major reasons for this may be that the traditional field course usually stressed observation and practice in the application of a variety of techniques; these course objectives are of only minimal service to a model-oriented geography. Several alternative formats for the (summer) field seminar appear to afford a useful learning situation for today's research-oriented advanced undergraduate and graduate students. These formats are discussed, as is their role in the problem-solving process.

In recent years, change has come rapidly to the undergraduate curriculum and just as certainly but less dramatically to graduate programs in geography. The lecture method has especially been under fire, and there has been a significant trend, I think, toward participatory education. The key word in the struggle for change seems to be "relevant"--a term rarely, if ever, really defined. Clearly defined or not, a relevant education is generally seen to include study of such topics as the environment and, more particularly, man's abuses of the environment, and a variety of social concerns including both personal and group relations. Perhaps an essential notion associated with this vaguely defined thing called relevance is that it allows the individual student to make both an intellectual and

emotional commitment to that which is being discussed. Even if intellectual rigor is not, as is often asserted, lost in the surge toward personal fulfillment, the concept of "discipline" may be made to yield to an interdisciplinary approach, and any notion of generalizing may be forced to give way to description of superlative situations.

It is rather ironic that field training in geography appears to hold a relatively weak position in most undergraduate and graduate programs; with a longstanding tradition of field work, one might expect geography to be eager and able to serve those students desirous of an opportunity to work in a non-classroom situation and with primary sources of information. But geographers, for a number of reasons, have not been quick to capitalize on their traditional concern with field work, and as a result, field work has, at best, been able to hold its own in the evolving curriculum and, at worst, has been unceremoniously phased out. There is little evidence to suggest that there has been a revivification of field work in geography programs since the Commission on College Geography's Technical Paper No. 1 (Hill, 1968), "Field Training in Geography," reported that "only 97 (seven percent) of the 1,321 four-year institutions reporting courses in geography in the 1965-66 Directory of College Geography in the United States provided any form of field experience, and 28 of these 97 were 'study tours'."

Reasons for the weak position of field training are many. Field courses may make heavy demands upon a department's transportation and equipment budgets, especially since logistical considerations frequently allow only small enrollments. Furthermore, many faculty members are not willing to take on a course which requires a large investment of energy and time, doubly so when the course is run on Saturdays.

Perhaps the most convincing explanations for the marginal status of field work come from Kenneth Corey (1968). In his article, "The Role of Field Work in Geographic Research and Instruction," Corey points out that much of today's geography is "conceptually-theoretically oriented," and that it may be extremely difficult, particularly at the undergraduate level, to develop a field course to serve the needs of those oriented along such lines. Furthermore, since field courses have traditionally been taught by those who, in Corey's words, are "perceptually-empirically oriented," there has been little enthusiasm for converting field work into a service course for those whose only concern is for long records of strictly comparable data.

An abundant literature deals with the practice of field work at all educational levels, although relatively few articles in recent years have dealt with the place of field work in the curriculum, especially the graduate curriculum. Noteworthy are articles by Corey and Hill in the AAG Technical Paper on field training and, less directly, Hill's (1970) article, "Strategies of the High School Geography Project for the Colleges: A New Heresy." In these articles, field training, particularly at the undergraduate level, is discussed in its relation to the educational process as described by Bruner and others (1963). The content and value of field work at the graduate level has been subject to even less discussion than undergraduate field work. Two recent articles, by Salisbury (1968) and by Gill and Ironside (1969), are important because they not only discuss graduate level field training, but also focus on the field seminar format. The field course is commonly conducted during the regular school year and is part of the regular on-campus instructional program; field time is generally confined to one or two large blocks of time during each week or perhaps

all day on Saturdays. Field training aimed at the graduate level is more likely to require relatively long periods away from campus, commonly during the summer. It is this field camp or field seminar course format that is the subject of the articles by Salisbury and by Gill and Ironside.

The remainder of this paper will be devoted to the discussion of two fundamental questions. First, where does field training, and the field seminar in particular, fit into the graduate curriculum? And second, what alternative seminar formats are available, and which best serve the educational goals of the total graduate program?

Perhaps that portion of the curriculum which has been least subject to change is the area of graduate instruction. While this topic has received some attention from the Commission on College Geography and from groups of concerned graduate students at various colleges and universities, pressures to alter graduate programs seem less apparent than those to modify undergraduate offerings. This is perhaps because of general recognition that if certification at advanced levels is to be meaningful, it must represent at least some familiarity with a variety of techniques and substantive areas.

One area in which graduate students get less help than they may need seems to be in the execution of research problems. This is probably true, especially at the master's degree level, where students may take a series of topical or regional courses, possibly a seminar in the history of geographic thought, and then are expected to write a thesis or take a comprehensive exam; experience is frequently lacking in problem formulation and execution. The field seminar is one means of bridging the gap which exists between topical and regional instruction and the submission of a thesis illustrating the student's ability to conduct independent research.

OBJECTIVES

The more traditional field courses of the past often have emphasized observation, "reading the landscape," and landscape description. The landscape is usually taken as a collage, and if some specific topic is singled out for close investigation, it is because it grew out of the process of observation. Sometimes, too, the business of observation is at least partially replaced by an emphasis on plane table work, sketching, and practice with a soil auger. These are all techniques that most geographers over the age of 30 have practiced--but rarely utilized--in their own research. This emphasis on observation and technique, in all probability, has contributed to the decline of the field seminar as a form of instruction. Corey, in his 1968 paper on field training, points to the decline of field work in American universities, a decline which is at least partially attributable to the failure of field courses to evolve to meet the needs of an increasingly model-oriented geography. If the field seminar is properly conceived and executed, it will not only complement a contemporary "model" approach, but can also provide the opportunity for the directed involvement with real problems which is being demanded by today's students. For the field seminar to have a strong problem orientation, it should be developed so that problem development follows an orderly process from problem situation description, to hypotheses, tests, and conclusion.

Fitting the entire problem-solving process into a short period of time, especially when much of this time is spent away from campus facilities, is no simple task. The amount of time devoted to the field seminar as it is now taught varies. Gill and Ironside (1968) found that most of the Canadian universities that have field camps of some sort, run them for one or two weeks. Salisbury sees three weeks as a good length of time for a field

seminar--this amount of time, he feels, allows opportunity for meaningful research without putting too much pressure on the good dispositions of both instructors and students. The field seminar offered by the University of Arizona lasts five weeks, which can be divided fairly satisfactorily to allow a week of pre-field preparation, two to three weeks of field reconnaissance and data collection, and a final week or two for analysis and report writing.

FOCUS

It has already been noted that the needs of today's geography can be well served by a problem-oriented seminar, particularly one which emphasizes the systematic collection of data. Here is where the value of a field seminar is most strongly felt. Empirical analysis often makes use of secondary data supplied, perhaps, by some governmental agency. But many problems require data of a specific type not usually reported or data which are highly disaggregated. The field seminar, then, allows the student the experience of actually collecting and ordering data obtained through direct observation, examination of local records, or interviews. Furthermore, it might be argued that the field experience gives the student a better "feeling" for both data and problem than is usually gained from the manipulation of secondary data. Even with emphasis on data collection, the student can still develop observational skills and may see new problems once in the field; an emphasis on "problem" and "data" need not be to the exclusion of the more traditional objectives of a field course.

STRUCTURE AND CONTENT

There is, of course, almost an infinite number of ways of arranging the content of a field seminar. I will identify three formats--one

developed by Gill and Ironside at Alberta and two which have been used with some success at the University of Arizona.

Gill and Ironside, in a recent article in the Canadian Geographer (1969), outline their approach to a field seminar. During a two or three week period (which, incidentally, seems rather brief), five predetermined problems are investigated by the seminar group. Problems are preselected to include a variety of techniques, geographic locales, and substantive topics.

While this format does allow, and in fact demands, exposure to a variety of techniques and substantive areas and does permit the instructor to anticipate questions, such considerations also act as drawbacks. Problems may be so tightly defined to fit into a short time span that treatment is superficial; the trials, tribulations, and rewards associated with a real research situation may be replaced under these circumstances by naive and superficial answers.

Two seminar formats which allow original research experiences have be been utilized at the University of Arizona and have met with some success. Unlike the seminar described by Gill and Ironside, with the focus on a series of rather narrowly defined field exercises, the Arizona seminars have stressed the solution of geographic research problems, with particular emphasis on the field collection of data. While a certain element of inefficiency certainly is built into a research problem-oriented seminar, it is felt thac the benefits gained by a student put in a supervised situation demanding the integration of field techniques into a total process of problem-solving far outweigh the inefficiency which may be associated with this approach. The two seminar formats are similar in that both require a pre-field period for the formulation of the problem and the development

of a research strategy, a field phase which is largely, but not exclusively, devoted to the business of collecting data, and finally, a post-field session for analysis and report-writing. There are also similarities in the utilization of field time. It is assumed that the sharpening of observational skills and practice in the application of data-collecting techniques is an almost inevitable product of the field experience and should not be the main concern of the field seminar. So, the primary mission of the problem-oriented field seminar becomes one of supplying data which may lead to the solution of some a priori defined problem, and not simply practice in observation and the application of selected techniques. Corey has noted that modern geography is oriented toward models and empirical tests of these models; testing may require large amounts of comparable data. The field seminar is especially well suited to the collection of large amounts of quantifiable data needed by problem-oriented students.

Primary differences between the two seminar formats are (1) in the origin of the problem to be studied, and (2) in the selection of procedures to be utilized during the field phase. One approach emphasizes individual student research projects which are unrelated, while the other stresses individual projects tied to some basic theme.

In the first of these two approaches, individual research projects of substantial magnitude are initiated by each student; for the most part, students work on projects unrelated to one another. The ideal situation is to preface the summer field seminar with a series of meetings in the spring semester so that each student has an opportunity to work out an appropriate problem suitable to the area or areas to be visited. The major advantage of this approach is that it allows each student experience in developing and executing a real research problem of his own design without being turned out in the field unsupervised.

Disadvantages, however, are many. The greatest problem associated with this format is that the student is forced to commit a good deal of time and energy in the spring preceding the seminar to working out a research strategy to be applied in an area that may be unfamiliar. In many cases this expenditure of time and effort will need to be superimposed upon the student's already full spring schedule of course work and research. The situation is made even more difficult if students planning to attend the field seminar are not on campus during the preceding spring. Once in the field, a major problem is to provide transportation for eight or ten students who are planning to go in different directions.

The second of the two approaches, and perhaps the more profitable, is the seminar in which a series of individual student projects are built upon a common theme and draw on a common data base. Before the course begins, instructors choose a problem or problems appropriate to the area in which the camp will be held. Problems may be relatively complex and only partially defined so that the student is still doing real research and not simply completing a field exercise that has answers predetermined by the course instructors. In the first week of the seminar, students are introduced to the problem area and then allowed to define individual problems which are related to the class problem and which, quite likely, will rely on a common pool of data.

The systematic collection of large quantities of primary data can be a problem for a student with only a short amount of field time at his disposal. This problem is most severe when data are to be collected by interview. One means of overcoming this problem, used with moderate success at the University of Arizona, requires each student to develop a series of specific questions around one theme; for example, if the problem area is tourism and recreation in the White Mountains of Arizona, an individual student might choose to

specialize in intra-regional visitor movements. Questions relevant to the several individual projects can be tied together in one questionnaire administered by all students, thus increasing the variety of interviewing sites covered and perhaps the number and character of those interviewed.

The advantages of conducting a field seminar around a predefined central theme are many. First, the student gets involved quickly with a specific problem, thus facilitating access to the field phase of the study. The instructor can anticipate at least some of the student's transportation and equipment needs, and some prior preparation can be made in areas where substantive questions are likely to arise. If questionnaires are to be used, on-campus facilities can be utilized in their preparation, and plans can be laid for card punching and other past-data collection activities. Finally, areas of common concern can be developed during discussion sessions in the field.

Disadvantages of this format do exist and must be recognized. Many students, especially the poorer ones, have trouble getting involved with a problem even when they are given a "head start" by course instructors. As a consequence, either they find themselves in the field unprepared to fully utilize field time, or they require so much guidance that much of the edge is taken off the problem-solving function. Even the better students may feel so tired after a day of collecting data that they try to substitute the physical work of collecting data for the intellectual work of problem-solving. Finally, it must be realized that a great deal of the compilation and even preliminary analysis must be completed before leaving the field so that the few days on campus before the end of the seminar can be used for detailed analysis of data and for report writing.

CONCLUSIONS

A great deal of effort has been directed toward making the contemporary geography curriculum more relevant. Suggestions for achieving this goal often go beyond the disciplinary limits of geography and may actually create a situation of disservice to students, especially graduate students who eventually will be required to produce research of a disciplinary nature. It is contended here that the field seminar can be developed to meet not only the needs of advanced students seeking first hand contact with problem situations, but it can also serve a contemporary model-oriented geography.

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RPWs: A MODEL FOR TRAINING GEOGRAPHY TEACHERS?

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INTRODUCTION

Our society not only expects, but increasingly demands, competent, qualified teachers to serve our schools. College and university faculties must accept the challenge and commit themselves to meet this obligation. Total university involvement in teacher education, however, portends to be a "late bloomer." Conversely, the university has fostered dualism between the teacher education and academic forces. The old rivalry still exists with little or no cooperation between the two factions. Although the academic faculty frequently has been fingered as the primary stumbling block to an all-university involvement in teacher education, education faculty are generally reluctant to give liberal arts professors a part in teacher education policy-making. Yet, liberal arts faculty teach from 75 to 80 percent of the undergraduate courses of future secondary teachers. Education faculty accept the responsibility for the training of teachers but have surprisingly little contact with them.

It has been easy to despair of the dilemma, but society is pressuring for improvement, and educators can no longer sit back and continue to "drop their bucket down a dry well." A trickle of hope is seeping through as inquiring faculty begin to question their role and contributions to the educational process and ultimately to society. They are beginning to realize that the function of teacher education is not merely to educate the college student, but also to help him in his endeavor to help others to learn.

The development of a solution to a problem often moves toward its solution at a number of points, although not with equal force. Thus, in the massive efforts aimed at improving education, focus has been on research, development, diffusion, and adoption of innovation in education (Clark and Guba in Havelock, 1971). Certainly a dramatic aspect of these efforts has been the drive, often generously supported by public funds, toward course content improvement--the research and development phases. Almost simultaneously to, but often independently of, the classroom materials approach was the expenditure of monies for programs designed to retrain teachers. These teacher training programs--the diffusion and adoption phases--at that time took the form of NDEA, EPDA and NSF institutes. In some cases, attempts were made to coordinate the research and development efforts with the diffusion and adoption programs. For the most part, however, these efforts were preliminary only.

THE NEED FOR A DIFFUSION MODEL

Frequently, individuals preparing new course materials were not directly associated with staff preparing and conducting the institute efforts. More often than not, those concerned with developing course materials were consciously not concerned with training teachers in the use of the newly developed materials. In many cases they had no choice; theirs was a full-time effort, and a considerable one at that. It might also be postulated that they were neither trained nor skilled in this phase of upgrading American education. Interestingly, a prime source of funds for these projects, the National Science Foundation, in its concern to upgrade science education, tended to support academicians who were cognate experts, not pedagogic specialists.

As materials were produced, two interrelated concerns became evident: (1) how can we insure maximum diffusion of these materials once they are completed; and (2) will teachers be able to effectively use these new materials in the classroom? Timidly at first, forcefully later, energies were expended in this direction. One of these efforts involved a marriage between the already existing institute program and the course content improvement projects; another was in the direction of programs designed specifically for training teachers in the use of the new materials. These programs, known variously as Leadership Conferences, Leadership Workshops, and currently as Resource Personnel Workshops, have been brief--from three to five weeks--intensive programs designed specifically to train groups of educators to use and diffuse the new materials.

Early in the ontogeny of High School Geography Project, questions relating to the diffusion and adoption of the forthcoming materials were raised. Although there were a number of individuals who were clamoring to examine and experiment with the materials, the overwhelming majority of educators had little or no knowledge of the effort. It was probably safe to assume that the new, highly attractive materials were not going to "sell themselves." There was, furthermore, the question of whether or not special training would be desirable or even necessary for teachers using the materials. The thinking went along lines that, although the format of the activities was relatively easy to follow, the strategies employed in various activities required different behavioral patterns from teachers in the classroom. In inquiry-oriented activities, for example, the role of the teacher is usually one of consultant, prober, and questioner (Hills in Bacon, 1970, p. 306). Furthermore, it was argued that the mere "newness" of the materials would preclude their being used in many instances.

Workshops, it was felt, could help minimize both of these potential barriers.

Although piecemeal evidence indicated that informal and minimal training had little apparent effect on the use of the materials in the classroom (Carswell in Patton, 1970, p. 46), the argument was presented that a more systematic approach should be used. Arguments also were presented in defense of the notion that greater effort should be expended in the direction of increasing the probability of the materials being used. Since millions of dollars were being expended in product research and development, the argument went, should not some effort be made to assure at least an exposure to the new product? In answer to these arguments, projects like the SRSS, BSCS, IPS, HSGP and others often developed a more or less systematic program of diffusing the materials and training teachers to effectively use the materials. This paper, then, is a preliminary report describing the rationale and organization of four RPWs funded by NSF and developed to encourage the adoption of and maximize the use of the High School Geography Project materials.

OPERATIONALIZING THE CONCEPT OF CHANGE AGENT

Diffusing the materials was viewed on two different scales. On the broad scale, the concern was with: "Which school systems included geography in their curriculum? Which did not? Which school systems were looked upon by educators as leaders in educational change? Should these systems be approached? Would it be more profitable to attempt entry into 'large' systems rather than 'small'? What about the spatial distribution of the systems? Should they be randomly dispersed or should they be clustered? Should entry be attempted on a regional basis?"

Concern for large numbers of students led to numerous attempts to involve some of the nation's largest school systems. More often than not, however, efforts were met with a labyrinth of red tape and an inability to find one or more individuals in the system courageous enough to attempt some change. Where a measure of success was experienced, it generally involved individual teachers. Usually a greater degree of success was met when working with those systems which had the reputation among teachers and administrators of being "innovative" schools. Here too, however, individuals were often the key factor.

Initially, attempts were made to minimize cost of the RPW by selecting systems "near" the institution conducting the Workshop. Thus, the Workshops conducted at Colorado State University tended to work with systems west of the Mississippi, while those held at Western Michigan University focused on schools in the eastern portion of the United States. Later, the "regional" constraint was lifted.

Before attention could be given to the second level of concern, the question of the number and type of individuals representing the school system had to be resolved. Here we felt a necessary component in the change model was the classroom teacher. This individual would be the chief communicator with his colleagues in the system. Knowledgeable about the materials and experienced in their use in the classroom, he could become a potent agent in the process of change.

Inasmuch as evidence suggests that the probability of success is increased when change is attempted through more than one individual (Lippett, 1949), preference was in the direction of including at least two teachers from the same system in the model. We were also aware of the resulting opportunity to enter more than one school in a system.

Including only teachers in the model probably excluded individuals in key positions, in both the decision-making process and in the diffusion mechanism. Presumably, two such positions are those of the building principal and the social studies coordinator. In the case of the former, it could be argued also that the principal of a high school in which there are a number of other social studies teachers could be influential in persuading the teachers in his building to use the materials. Furthermore, he often has considerable discretion in the use of funds for new materials.

There seems to be little basis for questioning the value of including the social studies supervisor on the team. Not only does this individual usually have access to all of the schools in the system, but his primary responsibility is to keep social studies teachers abreast of changes and the social studies curriculum reflective of those changes. He, too, often has funds at his disposal. He, with support from the teachers and the building principal as other team members, could become the critical mass necessary in order to initiate changes in a school system.

In some systems, an administrator other than the principal is in a key decision-making position when final budget allocations are made. Thus, it could be argued that the team ought to include a vice-superintendent in charge of instruction or some similar official. If this individual could be "sold" on the idea of adopting the new materials, then the budgets of the principal, as well as the supervisor, presumably could more easily include larger amounts in the "new adoptions" line of their respective budgets.

Training teachers to use "new" materials is more than an in-service task. Each year thousands of new teachers enter the profession. We need to ask, then, "What type of training should the student have who is undergoing training to become a teacher?" If a program of diffusion and training is

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to be fully effective, then concern for the training of the pre-professional should be taken into account. Thus developed the rationale for inclusion of a university-level individual whose responsibilities include teaching the "methods" course to prospective teachers.

During the conduct of RPWs in 1968 and 1969, difficulty was experienced in gaining an administrator as a member of the team. Frequent substitutions were necessary. In subsequent Workshops, therefore, team membership was reduced to four members: two teachers and a social studies coordinator from the same school system and an individual from a nearby institution of higher learning who taught a social studies or geography instructional methods course.

PROGRAM DESIGN

During the program planning phase, the Workshop staff raised and attempted to answer a number of critical questions. They can be grouped into three major categories.

The first category of concern centered on the participants as individuals and as members of a team. As individuals, what attitudes and values in regard to education and change would they bring? Did they view themselves as change agents? What individual needs would they exhibit? How flexible and open would they be? Were they coerced into becoming team members or did they come of their own volition? What problems peculiar to their school system would they face upon returning to the classroom?

The second set of concerns involved the questions: What would we, the staff, expect of the participants when they have finished the program; how would we perceive our role opposite the participants; how would the participants view us; would we be able to function as a team; what, individually and collectively, were our strengths and weaknesses?

And finally, our thinking and planning had a time-and-space dimension. What is the optimum time span for such an effort? How much time do we have? What budget considerations need to be taken into account? What type of living quarters would be conducive to developing an esprit de corps within the entire group, as well as within teams? What type of classroom space would facilitate teaching the various types of activities we had in mind?

Although the concerns noted above have been neatly categorized, in reality the staff dealt with them more or less simultaneously. For example, as the program was planned, space considerations were kept in mind, as were the number and makeup of the various teams and the duration of the program.

It was generally agreed that the Workshop, whenever possible, should be held in a conference center or a similar type facility. The physical confinement of the usual classroom facilities offered by universities tended, we felt, to promulgate a closed atmosphere which contradicted the openness we desired. It was also felt that a variety of rooms would be helpful. Rooms for instruction could be different from rooms in which small group sessions met or where teams could retire and concentrate on problems. In addition, small tables were an absolute necessity in the classroom in order to facilitate the handling of aerial photos and maps and to facilitate the considerable group activity called for by the materials.

What can be judged an optimum time span for the program is a difficult question to answer. Certainly there are practical considerations such as budget constraints, as well as the realization that the administrative members of the team often are on an eleven-month contract and therefore have professional obligations during the summer months. Budget constraints are real in that each participant is granted both a weekly stipend and a per-diem allotment. Another question posed was: "How long can a group expend

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their energies under the conditions of a Workshop environment?" From personal conversations with individuals who conducted workshops in other disciplines, the decision was made to attempt a four-week program. Later, for budgetary reasons and because it was difficult to obtain participants and staff for that length of time, it was decided to shorten the Workshop to three weeks.

The major goal of the Workshop program was to increase participants' familiarity with the materials and to develop competence in their utilization. This was accomplished by revolving the program around four major tasks: (1) preparing to teach; (2) teaching; (3) analyzing teaching and materials; and (4) preparing an implementation model.

More often than not, the familiarity and competence emphasized the pedagogic rather than the cognitive. The decision to emphasize the pedagogic came almost unconsciously, probably reflecting the feeling that the revolutionary nature of the materials was more pedagogic than cognitive.

During the research and development phase of HSGP, many requests for "progress reports" were made by interested educators. Out of these experiences we learned that a greater appreciation of the materials was engendered when the audience was asked to actively participate in an activity or portion thereof. As we planned the RPW program, these early experiences reinforced the belief that the best way for the participant to become familiar with the materials was to actually use or teach them in as realistic a situation as possible. Thus a strong component of the program was the inclusion of time for each participant to teach the materials to high school students. Experience in early Workshops led to the decision to increase the participant over-all teaching time to four hours. In some instances, teaching was accomplished by using the participants as students. This was

particularly desirable for the college methods individuals who used materials specifically designed for their use (see HSGP Teacher Education Kits). Demonstration teaching was done by the staff, as well as by using films of classroom teachers using the materials (see Associated Colleges of the Midwest Video Tape Project).

Selection of the activities to be taught was predicated on the time factor, as well as on the particular type of strategy involved in the activity. Generally, a variety of strategies was preferred, as was a range in the difficulty in teaching the activity. Thus role playing, simulation, inquiry, map and aerial photo use, and model building were among the strategies employed, while the difficulty level ranged from simple diagram interpretation to computing an involved water balance measure.

Following each teaching session, a measure of evaluation and analysis was attempted. This usually involved all or part of the following: objectives of the activity; type of strategy involved; effectiveness of the activity/strategy; and the over-all strong and weak points of the activity. Evaluation was aided by student feedback and, in later Workshops, by viewing videotapes of the teaching session.

As the Workshop progressed, more time was devoted to developing an implementation plan which the team was expected to carry out during the ensuing academic year. The plans were to reflect the peculiar problems the team faced in its home environment. Thus each model varied somewhat but often included plans for several in-service sessions with "back home" teachers and administrators; demonstration activities to local and state professional organizations (for example, NEA, NCSS) and, in some cases, presentations to the public via local television stations. Special activities were designed by the staff to help teams cope with local problems.

One effective technique was to confront the team with individuals, each playing the role of "back home" barrier (for example, the reticent administrator, the concerned taxpayer, the 3Rs school board member, and the like). Individuals playing the various roles were recruited from outside the Workshop. The activity proved to be extremely effective.

Although the Workshop as a temporary system is an ideal mechanism for bringing about changes, the ongoing operation of such a system includes a number of almost inherent difficulties. (For an excellent discourse on the subject of temporary systems, see Miles, 1964.) They stem from a number of different causes and call for a special type of action on the part of the staff. In fact, the nature of the various types of dissonance is such that one staff member ought to be trained to handle them. It also can be argued that staff need not wait for difficulties to develop before employing techniques designed to deal with them; staff should be sensitive to portending Workshop problems, as well as those team members might face in "back home" situations. A qualified staff member can be used to unravel staff problems.

Workshop situations frequently are remarkably similar to those which occur among students in classroom situations. The skills and understandings derived by individuals in gaining insight into their own behaviors may be transferred into the classroom and make possible solutions of similar problems.

IMPLICATIONS FOR FUTURE RPWs

Although the RPW program has not run its course, it is possible to make some preliminary recommendations relative to certain aspects of the program. One of these is the make-up of the team.

Despite the apparent ideal structure of the team, there are still some questions as to its effectiveness. In particular, the number of teachers to

be reached in a large school system may be just too large for four or five individuals to manage, despite their newly acquired expertise and enthusiasm for their task. Even when one could imagine so ideal a situation as a team operating with no other responsibilities than implementing the follow-through program, the effectiveness of this design is questionable.

An alternative to the four- or five-member team model would be to think in terms of working with only one school system at a time. In this situation, the Workshop participants could be selected so as to insure a representation from different schools within the system. The summer program could be similar to the RPWs described above, for example, including in the program the development of an implementation plan and incorporating a follow-through program involving all members of the team. Another variation could include employing a number of individuals, perhaps two or three on a half-time basis during the following academic year. A follow-through plan spanning a greater period of time than one year could be considered. It might also be desirable to move the Workshop staff to the group of teachers being trained. The move could come some time before the RPW begins so that a degree of familiarity with the total system can be attained. In this sense, the RPW can take on the characteristics of a Cooperative College School Science Program.

There could be numerous variations to these two "extremes," the variation to fit the school system desiring help.

SUGGESTED PROGRAM ALTERATIONS

Changes in many forms of human behavior are difficult to bring about. In attempting to change aspects of teacher behavior in the classroom, a number of interconnected and often deep-seated personal characteristics must be scrutinized. Values, attitudes, personality, and needs may be

disturbed in the process, creating a dissonance in the teacher's mind. (See Geertsma and Mackie, 1969; for a comprehensive and thorough review of dissonance theory, see Abelson and others, 1968.)

Experience suggests that this is indeed what happens to most of the participants in the RPWs. Confronted with new materials, teachers are made aware of the incongruity between the teaching behavior suggested in the new material and that which they regularly exhibit in their classrooms. Thus it seems imperative that a greater amount of Workshop time ought to be devoted to helping each participant develop a set of guidelines for changing his teaching behavior and thereby reducing the dissonance. Although a number of instruments have been designed to analyze teaching behavior (Tom and Woodley, 1971), one that would be particularly useful is Guided Self Analysis. Developed by Theodore Parsons (not dated), it is a self-help system which allows the teacher to systematically observe, describe, analyze, and evaluate selected aspects of his teaching behavior. Not only does it appear to be soundly based theoretically, but it is also inexpensive, easily used, and easily implemented. In the case of the RPW, the GSA system could be introduced during the summer program and used throughout the follow-through period.

IMPLICATIONS FOR PRE-SERVICE TEACHER TRAINING

One of the characteristics which frequently typifies a workshop is the esprit de corps which develops during the program--the feeling of being part of a worthwhile effort and being deeply immersed in it for an extended period of time (Miles, 1964, p. 473). There are many reasons for this, and a growing volume of literature revealing much analytic information attests to this (see especially Educational Opportunity Forum, 1969). The definitive and often relatively brief time span involved, the opportunity to become

intensely involved in an effort, the optimization of threat to the individual by membership on a team, the opportunity to concentrate on a limited number of concerns, the opportunity to work out individual problems in a friendly and helpful atmosphere, and the continuous availability of staff are all positive features of RPWs which should be incorporated in a pre-service teacher training program. Yet, the antitheses of these characteristics are operating in many pre-service teacher educational programs. Despite the fact that the student daily moves with tens of hundreds of individuals who have interests and concerns like his, he has little or no opportunity to become a member of a closely knit group with whom he can share his concerns and interests. Not only does the size of his peer group militate against his being able to identify with a group, but the very nature of his daily schedule also reinforces this condition. Generally demanding a passive role from him, the undergraduate's professional growth is regularly administered to him in fifty-minute doses three times a week. Further, in allowing--often requiring--him to register for five and six different courses during a semester, little is done to foster either a concentration of his thinking or to develop a feeling of his being part of an important effort. (Although the situation described above is not entirely similar, it is interesting to note how completely antithetical it is to the long known notion that, in its ability to handle incoming stimuli simultaneously, the human mind is limited to accepting only a relatively few independent items (see Bruner in Anderson and Ausubel, 1965, p. 77).

What, then, do the experiences in conducting RPWs suggest for pre-service training of teachers? One model follows.

The experimental program involving students interested in the teaching profession would consist of two phases. The first three years of an indi-

vidual's academic life, Phase I, would be the period during which the individual would concentrate on cognate disciplines, much as students do today. At the close of this three-year period, students would be grouped into teams of from twelve to fifteen students and would begin Phase II of their training. This teaming could be random and voluntary; or systematically, on the basis of individual characteristics and professional interests and orientation; or it could incorporate features of both extremes. Most of their professional experiences during this phase would occur in a team context and would consist of concentrating on a series of encounters designed to provide them with experiences and training in classroom teaching. The encounters would be organized into three sequential periods and each would continue from six or eight weeks to as much as a calendar year. During these periods, the entire day would be devoted to working on tasks related to the theme of the particular period in which they found themselves.

Each team would select or be assigned an experienced teacher from a local high school and two professors, one from education and one from a cognate field. These three individuals would work together closely with the team throughout the period. Ideally, help on a consultant basis would be available from members of other departments in the university.

A general outline of Phase II could look like this:

Period I: Introduction to Teaching

The emphasis during this period would be on gaining an introduction to classroom teaching. The primary goal would be to develop an awareness in each individual with numerous and varied teaching strategies. Each individual would teach brief episodes several times during the period. When not teaching, individuals would be involved in observing, describing, and

analyzing the various teaching strategies being employed. Staff would demonstrate specific strategies not employed by students.

Period II: Preparation Time

During this time, individuals would work to strengthen deficiencies revealed during the earlier introductory teaching experiences. Now students' content backgrounds would be extended and reinforced through the use of exemplary teaching strategies by the staff, as well as by work on individual and small group projects. The work would be tailored to meet individuals' needs. Although the time allocated to this period could be flexible, it would seem realistic to think in terms of from six to twelve months.

Period III: Second Teaching Experience

This teaching experience would, of course, strongly reflect the experiences stemming from Periods I and II. Emphasis now would be on the individual's behavior in the classroom as a teacher. Through the use of videotape, a sizeable portion of time and effort would be expended rigorously analyzing classroom interaction, with the view to modifying or strengthening the teaching behavior of each individual. This period would consume up to a calendar year and would consist of a series of teaching episodes. Each episode could vary in length and its focus could change in order to provide the intern with a variety of experiences.

There are, of course, numerous variations to the above program. Ideally, the specifics of the plan would be determined by the team and the staff and be developed as Phase II evolved.

CONCLUSION

There is much testimony from students and teachers which suggests that geographers have been more than moderately successful in meeting the chal-

lenge of improving the content of geography courses in secondary schools. There are indications that a few geographers now see the need for members of the profession to look seriously to the task of training geography classroom teachers. (See the Final Report of the Geography Group in Vogt, 1969.) Will we accept the challenge?

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A SOCIAL PSYCHOLOGIST'S NOTES ON THE GEOGRAPHY WORKSHOPS: DEVELOPING A COMMUNICATIONS-CONTENT MODEL

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Hindsight is 20-20. I wish I knew then what I know now about geography, geography teachers, and the workshops we conducted. This report is written backward, or at least partly so. It begins with the goals I now have for the workshops, goals I believe are shared by the staff. Then I turn to some methods, some assumptions, some of my roles and activities, and lastly, some evaluation-description of how the four workshops evolved and what might happen next. The happiest thing about this report is that it, too, evolved and it, too, would be different if we had more conferences to do. We are still learning.

The goals were: (1) to show each individual and team of teachers that they had more choices than they realized in teaching geography; (2) to encourage each person and team to exercise these choices on returning home; (3) to demonstrate new techniques which themselves modelled some different choices; (4) to practice skills related to the new ideas; and (5) to discuss some theory behind the new approaches to instruction. The methods varied. The staff, first of all, was to practice what it preached by trying out new ideas--for example, inviting participants to all staff meetings, which is analogous to having students participate in the planning of a course, and by processing (see below) its own efforts and meetings. Other methods were:

> openly talking about feelings, especially resistances, to whatever techniques were being used or whatever ideas were being suggested;

rewarding errors as sources of learning (in staff and participants), rather than claiming there was one right answer;

redesigning the program in response to what had occurred, and allowing goals to emerge, rather than having the program completely organized and planned;

and using maximally all the resources at the conference, rather than having stereotyped roles for staff and participants (for example, each staff member does "his lecture or thing" and each participant is a passive listener, occasionally a discussant).

The goals and methods were based on several assumptions about learning, some of which have been presented elsewhere (Lansky and Stafford, 1967; Lansky, 1967, 1969a, 1969b). A few are that: we are always learning, thus the teacher's task is to decide what learnings are to be worked on in the class, other than the usual ones of learning how to "work the system for a grade that satisfies me"; people seek excitement and tension, as well as relief from tension, thus curiousity is there to be tapped; emotions, feelings, and fantasies are ubiquitous and thus available for classroom use without teachers becoming therapists and students becoming patients (Lansky, 1969a; Jones, 1968; Borton, 1970); learning profits from feedback, especially open, constructive feedback from people; group structures, group size, room arrangements, and similar variables affect what can be learned and what is learned. An overriding assumption for all these is that each individual is affected differently by every factor--the basic notion of individual differences. Thus, each person has, whether he knows it or not, tremendous choice in how he will learn and what he will learn. (However, this is not to say, as some have recently insisted, that we learn only what we wish to learn. If the latter were true, then it would be much easier than it is now to get rid of old habits, attitudes, prejudices, feelings, concerns, and the like.)

Given these assumptions and some knowledge about learning, the staff approached the workshops-conferences as it wished the participants to

approach their problems in teaching introductory geography--all available resources were utilized to solve this particular problem, just as each learner at the conference used all possible resources when he had something he had to learn. The course or classroom, according to the staff's view, was to be like any other place where someone wanted to solve a problem and had special problem-solving skills.

The social psychologist's role was to help with the normal resistance that this stance met with and with the "working-through" of the strong feelings which emerged when the staff neither performed as expected nor completely accepted typical school-like behavior from the participants. The model and roles of the staff have been described more fully elsewhere (Lansky, 1972a, 1972b, in press), but a brief description here may help. The essential ingredient is that the entire conference (classroom) can be seen as a laboratory in which the staff (teacher) and participants (students) are both experimenters and subjects. The typical scientific self-correcting, often bumbling, open-to-error-and-change activities and sequences then apply. The conference (classroom) then has far less certainty (like most research) and considerably more excitement than the typical lecture-discussion-examination mode of instruction. "How does everyone respond to what is happening; just what does everyone want; how well are we doing?" All these become relevant questions. In the psychologist's jargon, these are "process" questions, questions about the processes of an activity, about how a group is maintaining itself. Insofar as most teachers and students are not used to answering these questions when they work on academic material (in contrast, for example, to working on a football team, with the astronauts, or on a scientific project), the feelings and skills needed seem not to be available. Yet, insofar as each individual does live in other settings, he/she knows how to

deal with feelings and processing; the problem is transferring them to the more academic setting and openly dealing with the complex feelings which arise as the staff purshes toward that transfer.

The field of sensitivity, t-group, or laboratory training (it goes under many names) has developed several techniques for dealing with this transfer and for helping those who, because of their over-all cultural stance against feelings, often reject the relevance of feelings to their daily lives. Thus, for some students and participants, the task is not transferring from other settings, but rediscovering (young children know it) that the whole person can be used in any situation, even in school. These techniques--we called them "communication exercises"--are blended in with the discussion of geography content.

One example may demonstrate the point. One useful activity is asking persons to share their goals. In the conference, rather than just writing them down or listing them in a large group, small units are asked to sit in a circle. One person states his or her primary goal, following which, the person to the left paraphrases--says in different words--what he heard. The entire group of six or seven then assists the two persons in clarifying just what the goal is. After the first goal is clarified, the first paraphraser states his goal and the next person paraphrases, and so it goes. Periodically, the group stops to ask what it has learned about paraphrasing, about communication, about stating goals, and about one another. Here, in a simple exercise, a group of teachers is sharing its goals, practicing a communication skill, and beginning to share feelings toward the subject matter, the communications activities, and toward one another.

The activity can be exhilirating for some as they see how difficult it is to speak clearly and to listen and how infrequently they and some others

do these. For others, however, the activity is an anathema. They came to the workshop to learn about some techniques for teaching geography. The "game" of paraphrasing is nonsense--beside which, they already either know about listening or know how to listen. Time is being wasted that is necessary for learning new teaching methods or new content.

Such feelings, and others, are accepted and listened to. Indeed, paraphrasing is used to make sure the communication is effective. In other words, negative, positive, and neutral feelings are accepted for several reasons. (1) They are real and deserve to be heard. Any reaction to the activity is as valid as any other. (2) These reactions will be felt by students in the classroom. The participants are seeing or feeling as students will. (3) Our acceptance of these feelings is modelling a different way of responding to feedback from the usual. Indeed, the workshop staff rewards the expression of feelings and participants' talking about them. (4) All the above can, at this time or later, be talked about as part of the learning model. (5) Theoretically, the open expression of feelings, especially authentic expressions of negative ones, is essential if the participants (and students) are to move toward a new kind of involvement and responsibility for their own learning, which the new model requires. Insofar as the staff is accepting and works with feelings (also a new stance), the situation is redefined for everyone.

The issue can be described another way--trust. The participants have to "test" the staff to find out just what the real agenda is. In a parallel way, when students encounter new teaching techniques, they will test the instructor; many of them prefer to continue the old familiar academic game (Runkel, Harrison, and Runkel, 1969; Lansky, 1969b).

The above model was in my mind as I signed up for these workshops. However, the entire staff was not agreed on this model. Indeed, many did not have any experience with it. As we might have predicted (Lansky, 1972b, in press), we then had considerable difficulty at the first workshop-conference (Bromwoods). The staff, including myself, was not clear about its role and its goals; there were many too many of us; some of us had a more traditional model for the conference in mind--we would present our material, rather than differentiate roles around the needs of the participants; there were at least two different psychological orientations toward workshop design and what psychological concepts should be emphasized, one of which focuses on classroom atmosphere as it relates to personality characteristics of the teacher (Harvey, 1970), and the other, as outlined above, focuses more on the "open classroom" (Kohl, 1969) and developing new skills in teachers and students (Lansky, 1972a, 1972b, in press). The staff did not work through their own differences thoroughly; thus, the conference was an amalgamation of different approaches, which was in my view quite successful, in part because of this amalgamation and in part because of the strong motivations and skills which brought the participants to the conference.

From feedback to date, it appears that various participants took away various learnings which led to specific new activities in their classrooms and course designs. This result fits one of my rubrics about teaching: the art of teaching is swiping what you can use.

We can be more specific, however. Some participants who instituted dramatic changes toward the use of fantasy and feeling in the classroom and toward opening themselves to considerable confusion about their own goals and methods were those who did have direct confrontations with the staff, including myself, about the model described above. Although the model was

presented to some persons in individual and small group sessions, it was not presented to the entire conference. At the time, we were not as clear as we are now about the potential value of sharing the theoretical base for the design. As already noted, we did not have a clear design at that time to present, at least not for that conference.

In the second conference, the staff used a model similar to the one described above but did not use very many specific communication activities. One reason was that the staff was all geographers, and again, several had not had any experience with the model. Here also, the reaction, at least to date, indicates there were many new learnings by participants. And, again, the staff used the previous experience--it did clarify its goals and methods. One conclusion was that the presence of resources to help directly with communications would be helpful. Thus was a communications person added to the third and fourth programs.

The third workshop was quite confusing for many participants. We began by saying that the participants could do as they wished--that is, a completely student-centered approach (Patton, 1955; Cantor, 1946). Then we imposed activities to foster the communications-content model. We also called what we were doing the "open classroom" (Kohl, 1969), which is nowhere as unstructured as Cantor's or Patton's completely non-directive view. The participants picked up the triple message and soon confronted us with the confusion. In dismay, we got the message and acknowledged that we had intended neither a completely student-centered nor an open classroom view, but something that used elements from both. We never did, however, make our own view completely clear to the participants (or to ourselves). Some clear items were: (1) we were confused about labels; (2) we did have a structure; (3) that structure required that participants be included in the planning, that we should develop

the program in response to the needs of the staff and participants, and that we should openly discuss problems in carrying out the workshop.

Over-all, we felt that we had made progress because of the strong feelings and the specific ideas expressed about the program. At the closing session, several participants performed a multi-versed ditty which indicated that our approach to learning had affected attitudes and behavior. However, we still had not provided a theoretical explanation of our learning model in terms that most participants could follow. Indeed, several persons left the workshop confused about why we had shared strong feelings and had encouraged others to do so; some felt we were getting into therapy rather than education.

In the fourth workshop, we took another step toward the communication-content model. We used our resources in many different roles; the social psychologist provided both communications activities (some for all, others for volunteers only) and theoretical input; some sessions were planned by staff, others by participants, others by joint teams; and the theory behind the entire design was spelled out in detail for the entire workshop (a first for this activity).

The staff also realized that the tensions during the opening phases of the workshop had consistently and directly affected those of us responsible for those sessions, and, indirectly, had affected the others. This "insight" helped us account for some difficulties in the earlier programs; in every instance, much tension and dissatisfaction occurred around the opening session and the persons conducting it. This new awareness increased the mutual support among the staff following the opening session. In the past, we had been overly concerned about having done the "wrong" thing at the start. As I write this paragraph, the point seems obvious. Prior to the fourth workshop, we had not felt its full theoretical or practical impact.

Providing a lecture on theory was another critical item, but not a panacea. It did help those who tended to think first in theoretical terms or who wanted some assurance that the staff, especially the social psychologist, had some "reasons" for what was going on. Others found the lecture material useful because it gave them "handles" for ideas they were beginning to formulate. Still others wished that we had let them discover more for themselves. And, alas, there were those who were still turned off--at least two, one of whom left the workshop-conference before it ended. The point here is that, by providing practice, simulations, games, and theory, we were tapping into more individual ways of learning and giving more participants a chance to at least understand what we were getting at; though acceptance is, of course, another issue.

Here then, as I see it now, we were using some of the insights to be gained from O. J. Harvey's (1970) approach. By using varied teaching-learning strategies, we were individualizing instruction--that is, we were more sensitive to individual differences among participants, rather than forcing a point of view and a method down people's throats while claiming we were really free, open to all ideas, and willing to listen to other views.

I am not saying that we do not have a strong point of view; we do and we did. Yet, in the fourth workshop, we seemed more secure with it, secure enough that we accepted the notion that unwittingly we were saying to some that there is one way. Indeed, once we saw our error, we acted on our belief openly and directly: we ceased giving double messages.

As a result, I think we felt better as a staff, and the participants were freer in their critiques and far more open in sharing responsibility for the conference-workshop. They also experimented more--another positive outcome.

One source of my shift occurred during the third workshop; another came through correspondence afterward with one participant. During the workshop, one participant described his work with audiovisual aids, teaching machines, computer-assisted instruction, and the like. Besides sharing his technical skill and his satisfactions at helping students pace themselves and feel positive about learning, he also shared his own discomfort at becoming a "stage manager" (a term I borrowed from a colleague at Cincinnati, R. J. Senter) for education, rather than a direct lecturer, teaching his students. He was dealing with his feelings of not being in direct touch, not getting direct feedback about this role, and the like. At that point, it dawned on me (insight comes slowly) that all the new teaching strategies drastically change the teacher-student relationship. Even Skinner (1968) has said that very loudly, pointing out that getting the teacher out of the direct contact helps the student. I had not focused enough on how that must make the teacher feel. My objections to machines and such had been narrowed to my own dislike of many programs I had seen (such programs bore me). I had not realized what such methods do to the typical student-teacher relationship and how it affects one as a teacher.

At that juncture, I saw much compatibility between those who are trying out these methods and those of us who are helping students become resources for one another through small group, project-oriented techniques. One of our concerns is loss of control of students; others are lack of contact and lack of power. We have to trust the, and we find ourselves lonely, as do teachers who use "hardware" approaches. This breakthrough in my thinking--thanks to the openness of the participants in the program--then led me to look hard at the double messages in our design for the third workshop.

Similarly, our failure to communicate with one professor about why we had pushed the exposure of strong feelings pointed out another shortcoming of the program. No doubt others had felt the same way, but the man in question wrote to John Ball. My written reply helped a bit, he said in a return letter, but I believe my response helped me even more. Spelling out my reasoning in the letter led me and the other staff members to see that we had not explained our views clearly or completely. How come? Why had I hesitated to share my theoretical ideas with colleagues from another field? They had shared with me.

It would be nice to be able to say that we then deliberately planned the theoretical presentation described above for the fourth workshop. The fact is we did not. That event "sort of just happened." We have not had an opportunity to try it again--more deliberately. But the event did provoke some memories, memories which again demonstrated that "new" ideas and actions are few and far between and that intellectual knowledge is often only a small step toward "insight" and new action. The theory is not new (Schein and Bennis, 1965), nor is my commitment to using theory in sensitivity workshops.

When I was active in doing sensitivity training sessions, I regularly did two things which put me on the "conceptual" end of the conceptual-experimental continuum among trainers: (1) I always brought along a library of reading materials for those participants who wanted to see things written down--they use the written word to foil against, to absorb, to think, and so forth; (2) I urged staffs to include considerable theoretical input, sessions designed to give intellectual handles for the processes occurring during t-groups, exercises, informal discussions, and the like. Somehow, this side of things had not carried far enough into the content workshop design (Lansky, 1972a, in press). To be sure, we regularly included a lecture about the

difference between task and maintenance functions in a group, thus giving some rationale for the importance of overtly discussing the processes going on in a group. And we distributed a bibliography on human relations and communications for use after the workshops. But we did not, at least typically, include any lecture material on why the strong affect comes out as it does and why that seems to be a crucial step in changing the relationships between teachers and students and among students.

Where do we go from here? First, we need research on the previous programs, some of which is being done now. Second, we need to set up more workshops, ones with research built in at the macro and micro levels. For example, can we design programs and randomly select teams and get data from all applicants before the programs and afterwards, at various intervals? One fascinating micro-design would be to use an activity which we know has been successful at the end of a program, at various stages, to test reactions to it. The prediction is that acceptance of the material and presenter would tend to be negative before, and positive after, strong confrontations between and among staff and participants (Lansky, 1972a, 1972b, in press).

Perhaps this report can be the first step in a larger effort to spell out our strategies and our learnings, and--hopefully--to attach some systematic concepts here and there in order to facilitate new designs and research. I feel that we have just scratched the surface. The programs have certainly been successful according to one criteria: they have raised more problems than they have solved.

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REFLECTIONS ON THE ROAD SHOW

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I seem to have been asked to participate in a road show as a "resource person," that is, a person with some legitimacy in an area of geography that is relevant to the content of an introductory course. I assumed that my role would be to propose and defend some of my ideas about content which I felt were quite new. This content was focused on man (and therefore the student as well) as the agent responsible for creating and transforming the landscape and thus the primary agent for restructuring that landscape to serve best his needs and development. Because of my interest on the undergraduate level in students experiencing planning and responsibility for the environment, I have elected to structure much of my introductory course on the basis of role-playing exercises. But the procedures were not designed for their pedagogical merit, which I was quite ignorant about, but because of their expedient value in communicating content.

I saw as my primary task in the first road show to explain and demonstrate this organization of content and the role methodology to which it was functionally related. Yet I saw this task largely as a "performance," in the sense that it had worked well for me, and I wanted to exhibit it proudly to others who might want to adopt the framework.

The process was limiting because, as I learned from listening and watching Lansky, Hill, and Knos, their message seemed much more profound. Yet it was difficult for me to depart from this mold because it seemed to work well

with the participants, and other "looser" procedures would be more risky, in the sense of possible failure. Through the succeeding shows, I became more discontent with my own rather narrow role, although participant reaction continued to be favorable. That was the primary value for me--learning that even a "flawless" presentation was an insufficient goal for either the instructor or the student victims.

It was very important to learn that my preoccupation with a flawless performance could be severely detrimental to students in the learning process, and in this way I felt throughout the sessions that my teaching requires of me as much attention and introspection as from any of the participants! It was only in the last two institutes (Asilomar and Airlie House), where I could be sufficiently comfortable about my own presentation, that I was able to become more aware of what the rest of the staff was talking about. Lansky was at first so professional, insightful, and confident that I found it difficult to internalize his message, but later it came through as learnable. Hill and Knos were never predictable for me, and it was an especially helpful experience to observe their flexibility. Schmudde and Ball taught me a great deal about the value of experimentation.

The institute idea was a very good one, and the outcome went way beyond my expectations. The human experiences among and between both staff and participants greatly exceeded what I thought possible. It was particularly impressive to see how many people in our field have shifted to a vigorous interest in the learning process and its associated connotation in terms of values.

PRELIMINARY EVALUATION REPORT
OF THE
AAG PROJECT ON THE IMPROVEMENT OF COLLEGE GEOGRAPHY INSTRUCTION

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There are a number of phases to the AAG Project on the Improvement of College Geography Instruction. This report deals only with four regional conferences held during the period from June, 1970 through June, 1971 under the leadership of John Ball. The purpose of these conferences was the improvement of instruction in introductory college geography courses offered by Ph.D and M. A. granting departments.

To help determine the effectiveness of these conferences, we mailed a questionnaire to all 143 participants in October, 1971. (See p. 110 of this report.) This preliminary report provides a summary of the questionnaire results. A final report, incorporating data obtained during the conferences and an in-depth analysis of some of the apparent effects of the conferences, will be available by July 1, 1972.

These conferences were planned to concentrate on teaching strategies and and learning processes, while avoiding controversies about the ideal content of an introductory course. The conferences were characterized by efforts to involve the participants actively. To this end, simulation games and small group discussions were a major feature of each conference. Participants were also involved in planning the program of each conference. From such experiences, it was hoped that the participating professors could use more participatory and interactive processes in their own college classes.

Another major characteristic of the conterences was the invitation of teams of instructors from each department. Consequently, most of the participants came with one or two colleagues from their departments. Seventy-two departments were represented by the 143 participants. A number of department chairmen were among the participants.

The staff included geographers and psychologists. Although several staff members remained the same for all the conferences, there were a few personnel changes for each conference. There were usually seven or eight staff members for thirty-six participants. In addition, two observers attended each conference and prepared reports.

An unusually high proportion of the participants, 87 percent, responded to the questionnaire. Responses ranged from 75 percent for the Asilomar participants to 94 percent for the Airlie House participants. Twelve of the 124 respondents were department chairmen and five were teaching assistants. Most of the respondents were members of two-person (47 percent) or three-person (31 percent) departmental teams.

The over-all response of participants to the conferences was remarkably positive. This is shown in the responses to questions five, eight, and fourteen on the questionnaire. About the same percentage of respondents said they were "very positive" (40 percent) or "somewhat positive" (42 percent) about the conferences, while only 13 percent were negative. More striking is the response to the question comparing these conferences in terms of interest with others the participants had attended. After eliminating respondents for whom this was the first conference attended, 56 percent said these conferences were "much more interesting," 31 percent said "slightly more interesting," and 13 percent again found these conferences less interesting

than others they had attended. These positive results were confirmed by the 80 percent who would probably attend another conference.

One of the major purposes of the conferences was to influence the teaching procedures used in introductory geography courses. Responses to questions seven and nine suggest that the conference experience did lead to changes in classroom practices. Eighty-three percent of the respondents indicated the conferences affected the way they teach. The same percentage said they tried to do things differently in class as a result of the conference.

Another purpose of the conferences was to raise the level of interest in instructional matters. This might be evidenced by changes in the reading habits (question 11) and research interests (question 10) of participants. The conferences apparently had much more influence on professional reading habits than on the research interests of the participants. Forty-five percent said the conferences affected their reading habits, but only 10 percent said the experience had influenced their research interests.

Additional evidence of participant interest in instructional topics is indicated by the 86 percent positive response to question fifteen. This suggests that AAG meetings might provide more sessions dealing with instructional concerns.

The conferences had yet another purpose, to influence the way participants would work with colleagues within their own departments, as well as with their students. Questions twelve and thirteen are related to this purpose. Only 14 percent felt the conferences would influence their way of working with their department chairmen, but almost 50 percent thought the conferences influenced their way of working with teaching assistants and other department colleagues. Most marked, of course, is the 78 percent who indicated the conferences influenced their way of working with students. As

evidence that the conferences had influence beyond a participants' own department, 63 percent said that their conference experience led to continuing contacts with others outside their department.

Attempting to identify factors influencing attitudes is extremely difficult. Question six represents one effort to do so. Since some respondents checked more than one factor, the sum of percentages exceeds 100. Thirty-five percent of the respondents checked "the topics considered" and "the staff" as influences on their attitude toward their conference. Thirty-one and twenty-six percent, respectively, identified "the conference activities" and "other conference participants" as influences on their activities. The sixteen participants expressing negative attitudes toward the conferences were apparently influenced to the same degree as the positive participants were by the listed factors. For the final evaluation report, additional information will be obtained to clarify the factors contributing to participant attitudes.

It seems clear from the responses obtained that the Airlie House and Hueston Woods Conferences were more positively received than the other two.

	Very Positive	Somewhat Positive	Neutral	Negative
Bromwoods	23%	53%	7%	17%
Hueston Woods	48%	42%	6%	3%
Asilomar	26%	44%	7%	21%
Airlie House	59%	29%	0	12%

The almost sixty percent "very positive" response for the Airlie House conference suggests that experience with previous conferences may have prepared the staff for an unusually effective effort. It is interesting to note, in this regard, that almost half the participants identified "the staff" and "conference activities" as factors influencing their attitudes.

Participants at each of the other three conferences identified different factors as more important in influencing their attitudes.

Since the ratio of "very positive" to "negative" responses is a key indicator of group attitude, the Hueston Woods Conference was unusually successful also. Bromwoods and Asilomar appear to be only moderately successful in generating positive attitudes on the part of their participants. These conclusions also are supported by comparing the conferences in terms of response to the interest question (number eight).

There appears to be little of significance to be said about the ideal team size at conferences such as these.

	Number of Respondents	Very Positive	Somewhat Positive	Neutral	Negative
Four on a team	16	44%	38%	0	19%
Three on a team	39	44%	46%	3%	8%
Two on a team	58	33%	41%	7%	17%
Individuals	11	64%	36%	0	0

The few participants who came alone were all positive. If we look at "very positive" to "negative" ratios, those on teams of three seem to be somewhat more positive about their conference than either the four or two member teams. Further examination of this question will be necessary to reach conclusions about an ideal team size.

FOLLOW-UP QUESTIONNAIRE
1970-71 AAG CONFERENCES ON THE IMPROVEMENT OF COLLEGE TEACHING

1. Check the conference you attended.
   30 Bromwoods, MO June 9-13, 1970
   33 Hueston Woods, OH October 18-21, 1970
   27 Asilomar, CA March 21-23, 1971
   34 Airlie House, VA June 9-12, 1971

2. Check your position in the department at the time you attended the conference.
   12 Chairman
   107 Non-chairman
   5 Teaching assistant

3. How many from your department attended the conference? ____

4. Did the department chairman attend?____

5. What is your present attitude toward this conference?
   40% Very positive
   42% Somewhat positive
   5% Neutral
   11% Somewhat negative
   2% Quite negative

6. Which of the following most influenced your present attitude toward the conference?[1]
   35% The topics considered
   5% The location and facilities
   35% The staff
   26% Other conference participants
   31% The conference activities

7. What effect do you think the conference has had on the way you teach?
   22% Considerable
   61% Some
   1% Can't recall--not sure
   14% Probably very little
   2% Surely no effect

8. How interesting was this conference compared to other conferences you have attended?
   47% Much more interesting
   26% Slightly more interesting
   10% Less interesting
   1% Much less interesting
   16% First conference I attended

[1]The sum of percentages exceeds one hundred because some respondents checked more than one factor.

9. Have you tried to do anything differently in a class as a result of the conference?

83%	Yes	What?
12%	No	
5%	Uncertain	

10. Did attendance at the conference influence your research interests?

10%	Yes	How?
80%	No	
10%	Uncertain	

11. Did attendance at the conference influence your professional reading habits?

45%	Yes	How?
50%	No	
5%	Uncertain	

12. Did the conference have any influence on the way you work with your

a. department chairman?

14%	Yes
72%	No
14%	Uncertain

b. teaching assistants?

49%	Yes
40%	No
11%	Uncertain

c. other department colleagues?

47%	Yes
40%	No
13%	Uncertain

d. students?

78%	Yes
13%	No
9%	Uncertain

13. Did attendance at the conference lead to contacts outside your department which continued in any way after the conference?

63%	Yes
25%	No
12%	Uncertain

14. Would you go to another conference close to your college this spring?

80%	Probably yes
10%	Probably no
10%	Uncertain

15. Do you think there should be more attention at professional meetings to instructional topics than there is now?

86%	Yes
4%	No
10%	Uncertain

16. Do you have any additional comments?